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IDA/R2016-0314/1

December 30, 2016

Closing Date: Monday, January 23, 2017 at 6 p.m.

FROM: Acting Vice President and Corporate Secretary

Tanzania - Second Water Sector Support Project

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed credit to Tanzania for a Second Water Sector Support Project (IDA/R2016-0314), which is being processed on an absence-of-objection basis.

Distribution:

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Document of
The World Bank

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Report No: PAD1757

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR166.30 MILLION
(US$225 MILLION EQUIVALENT)

TO

THE UNITED REPUBLIC OF TANZANIA

FOR THE

SECOND WATER SECTOR SUPPORT PROJECT

December 29, 2016

Water Global Practice
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective November 30, 2016)

Currency Unit	=	TSh (Tanzania Shillings)
TSh 2,180	=	US$1
US$0.73868337	=	SDR1

FISCAL YEAR

July 1 – June 30

ABBREVIATIONS AND ACRONYMS

BCC	Behavior Change Communication
BoD	Board of Directors
BWB	Basin Water Board
CAG	Controller and Auditor General
CAS	Country Assistance Strategy
CBO	Community-Based Organization
CC	Catchment Committee
CEO	Chief Executive Officer
CIA	Chief Internal Auditor
CPA	Certified Public Accountant
CQS	Selection Based on Consultants' Qualification
DA	Designated Account
DALY	Disability-Adjusted Life Year
DAWASA	Dar es Salaam Water and Sewerage Authority
DAWASCO	Dar es Salaam Water and Sewerage Corporation
DBO	Design, Build, and Operate
DEWATS	Decentralized Wastewater Treatment System
DFID	U.K. Department for International Development
DMA	District Metered Area
DMDP	Dar es Salaam Metropolitan Development Program
EIRR	Economic Internal Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
EWURA	Energy and Water Utilities Regulatory Authority
FBS	Selection under Fixed Budget
FIRR	Financial Internal Rate of Return
FM	Financial Management
FSM	Fecal Sludge Management
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographic Information System

GIZ	German Agency for International Cooperation
GoT	Government of Tanzania
GPS	Global Positioning System
HR	Human Resources
IA	Implementing Agency
IC	Individual Consultant
ICB	International Competitive Bidding
ICT	Information and Communication Technology
IFR	Interim Financial Report
IUWM	Integrated Urban Water Management
IWRM	Integrated Water Resources Management
IWRMD	Integrated Water Resources Management and Development
KPI	Key Performance Indicator
LCS	Least-Cost Selection
LGA	Local Government Authority
LVEMP	Lake Victoria Environment Management Project
M&E	Monitoring and Evaluation
MOU	Memorandum of Understanding
MOWI	Ministry of Water and Irrigation
NCB	National Competitive Bidding
NGO	Nongovernmental organization
NPV	Net Present Value
NRM	Natural Resources Management
NRW	Nonrevenue Water
NWB	National Water Board
O&M	Operations and Maintenance
ODSS	Operational Decision Support System
PAF	Performance Assessment Framework
PBC	Performance-Based Contract
PCU	Project Coordination Unit
PIM	Project Implementation Manual
PMF	Program Management Firm
PMU	Procurement Management Unit
PORALG	President's Office Regional Administration and Local Government
QBS	Quality-Based Selection
QCBS	Quality and Cost-Based Selection
RTT	Reform Technical Team
SC	Steering Committee
SCC	Subcatchment Committee
SDG	Sustainable Development Goal
SPS	Small Piped Water Supply
SSS	Single-Source Selection
SWAp	Sectorwide Approach

TA	Technical Assistance
TMA	Tanzania Metrological Agency
WC	Water Committee
WRM	Water Resources Management
WSDP	Water Sector Development Program
WSS	Water Supply and Sanitation
WSSP	Water Sector Support Project
WTP	Water Treatment Plant
WUA	Water User Association
WWT	Wastewater Treatment

Regional Vice President:	Makhtar Diop
Country Director:	Bella Bird
Senior Global Practice Director:	Guang Zhe Chen
Practice Manager:	Jonathan Kamkwalala
Task Team Leader:	Yitbarek Tessema

TANZANIA

Second Water Sector Support Project

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PAD DATA SHEET

Tanzania

Second Water Sector Support Project (P150361)

PROJECT APPRAISAL DOCUMENT

AFRICA

Report No.: PAD1757

Basic Information			
Project ID P150361	EA Category B - Partial Assessment	Team Leader(s) Yitbarek Tessema	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ] Financial Intermediaries [ ] Series of Projects [ ]		
Project Implementation Start Date 23-Jan-2017	Project Implementation End Date 31-Dec-2021		
Expected Effectiveness Date 19-May-2017	Expected Closing Date 30-Jun-2022		
Joint IFC No			
Practice Manager/Manager Jonathan S. Kamkwalala	Senior Global Practice Director Guang Zhe Chen	Country Director Bella Bird	Regional Vice President Makhtar Diop

Borrower: UNITED REPUBLIC OF TANZANIA			
Responsible Agency: Ministry of Water and Irrigation			
Contact:	Eng. Mbogo Futakamba	Title: Permanent Secretary	
Telephone No.:	255222450838	Email: psmw@maji.go.tz	

Project Financing Data(in USD Million)		
[ ] Loan	[ ] IDA Grant	[ ] Guarantee

[X] Credit	[ ] Grant	[ ] Other	
Total Project Cost:	230.00	Total Bank Financing:	225.00
Financing Gap:	0.00		

Financing Source	Amount
BORROWER/RECIPIENT	5.00
International Development Association (IDA)	225.00
Total	230.00

Expected Disbursements (in USD Million)

Fiscal Year	2017	2018	2019	2020	2021	2022
Annual	0.00	20.00	62.00	75.00	47.00	21.00
Cumulative	0.00	20.00	82.00	157.00	204.00	225.00

Institutional Data

Practice Area (Lead)

Water

Contributing Practice Areas

Proposed Development Objective(s)

The Project Development Objectives are to: (a) strengthen the capacity for integrated water resources planning and management in United Republic of Tanzania, and (b) improve access to water supply and sanitation services in an operationally efficient manner in Dar es Salaam.

Components

Component Name	Cost (USD Millions)
Component 1: Integrated Water Resources Management (IWRM)	50.00
Component 2: Dar es Salaam Water Supply Improvement	87.00
Component 3: Dar es Salaam Sanitation Improvement	84.00
Component 4: Project management and Implementation Support	9.00

Systematic Operations Risk- Rating Tool (SORT)

Risk Category	Rating

1. Political and Governance	Moderate
2. Macroeconomic	Moderate
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	Substantial
8. Stakeholders	Substantial
9. Other	Substantial
OVERALL	Substantial

Compliance	
Policy	
Does the project depart from the CAS in content or in other significant respects?	Yes [ ] No [X]
Does the project require any waivers of Bank policies?	Yes [ ] No [X]
Have these been approved by Bank management?	Yes [ ] No [ ]
Is approval for any policy waiver sought from the Board?	Yes [ ] No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X] No [ ]

Safeguard Policies Triggered by the Project	**Yes**	**No**
Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04	**X**	
Forests OP/BP 4.36		**X**
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10		**X**
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37	**X**	
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	Recurrent	Due Date	Frequency
Financing Agreement Reference: Schedule 2, Section I.A. 2		20-Nov.-2017	

Description of Covenant

The Recipient through MOWI shall, no later than six (6) months after the Effective Date, engage individual competent technical experts in the areas of financial management, Project management, procurement and contract management to support Project implementation until appointing and thereafter maintaining, at all times during the implementation of the Project, a Project Management Firm, with terms of reference, experience and functions satisfactory to the Association. Said Project Management Firm shall provide all necessary support to the MOWI for effectively managing the Project.

Name	Recurrent	Due Date	Frequency
Financing Agreement Reference: Schedule 2, Section I. D. (a)		20-Aug-2017	

Description of Covenant

The Recipient shall through MOWI, no later than three (3) months after the Effective date, enter into a Memorandum of Understanding with each of the BWBs and TMA for coordination of implementation of Part A of the Project, and a Memorandum of Understanding among the Regional Administration, the municipalities under Dar Es Salaam, DAWASA and DAWASCO for coordination of implementation of off grid water supply and sanitation under Parts B and C of the Project; and cause Project to be implemented in accordance with the provisions of the Memorandum of Understandings; provided, however, that in case of any conflict between the provisions of said MOUs and this Financing Agreement, the provisions of this Financing Agreement shall prevail.

Name	Recurrent	Due Date	Frequency
Financing Agreement Reference: Schedule 2, Section I. F. (a)	**X**		Yearly

Description of Covenant

The Recipient, shall prepare and furnish to the Association for its agreement, not later than [July15] of each year of Project implementation, or such later date as the Association may agree, an annual work plan and budget containing all proposed activities to be carried out under the Project in the following Fiscal Year, modified in a manner satisfactory to the Association, taking into account the Association's comments and views on the matter.

Name	Recurrent	Due Date	Frequency
Financing Agreement Reference: Schedule 2, Section I.A. 3		30-Jun-2019	

Description of Covenant

The Recipient shall through MOWI, not later than June 30, 2019, complete all necessary internal processes required under the Recipient laws for putting in place bulk supply arrangements, including the signing of a bulk supply agreement between DAWASA and DAWASCO.

Conditions		
Source Of Fund	**Name**	**Type**
IDA	Project Implementation Manual	Effectiveness

Description of Condition

The Recipient has adopted the Project Implementation Manual in form and substance acceptable to the Association.

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
Yitbarek Tessema	Team Leader (ADM Responsible)	Lead Water and Sanitation Specialist		GWA08
Gisbert Joseph Kinyero	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist		GGO01
Michael Eriu Okuny	Financial Management Specialist	Sr Financial Management Specialist		GGO31
Ajith C. Kumar	Team Member	Sr Water & Sanitation Spec.		GWA01
Carolina Dominguez Torres	Team Member	Sr Water & Sanitation Spec.		GWA07
Dawit Tadesse Mekonnen	Team Member	Program Assistant		GWA01
Edward Charles Anderson	Team Member	Senior Disaster Risk Management Specialist	Senior ICT Policy Specialist	GSU19
Gabriel Lwakabare	Team Member	Consultant		GWA01
Gloria Sindano	Team Member	Program Assistant		AFCE1
Helen Z. Shahriari	Team Member	Sr Social Scientist		GSU05
Jane A. N. Kibbassa	Safeguards Specialist	Senior Environmental Specialist		GEN01
Kristoffer Welsien	Team Member	Water & Sanitation Specialist	Water & Sanitation Specialist	GWA01
Mary C.K. Bitekerezo	Safeguards Specialist	Senior Social Development Specialist		GSU07

Nadege Mertus	Team Member	Temporary	Team assistant	GWA08
Neil Alastair MaCleod	Team Member	Consultant		GWAWP
Pieter Waalewijn	Team Member	Sr Water Resources Mgmt. Spec.		GWA09
Solomon Alemu	Team Member	Consultant		GSU13
Victoria Hilda Rigby Delmon	Team Member	Senior Counsel	Senior Council	GWAGP

Extended Team

Name	Title	Office Phone	Location

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Tanzania	Dar es Salaam	Dar es Salaam Region		**X**	

Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required ?	Consultants will be required

I. STRATEGIC CONTEXT

A. Country Context

1. **Tanzania is on a strong economic growth trajectory but poverty rates, particularly among rural households, are still high.** Tanzania has experienced strong and rapid economic growth, with annual gross domestic product (GDP) growth averaging about 7 percent in the last decade. It is expected that this growth trajectory will be sustained in the years to come, enabling Tanzania to achieve middle-income status by 2025. Despite sustained economic growth, Tanzania is one of the poorest countries in Africa with approximately 13 million people (28 percent of the population) still living below the basic-needs poverty line. Tanzania's economy is highly dependent on natural resources, including water. The majority of the population, mainly in rural households, rely on agriculture for their livelihood and do not have access to irrigation. The Government is therefore prioritizing agriculture as a means of economic empowerment and—given the economic and social importance of water for national growth and development—is therefore intending to incorporate measures to address competing demands for water in the country's development plans.

2. **Tanzania is endowed with relatively abundant freshwater sources but these are unevenly distributed and increasingly at risk.** On average, Tanzania's renewable freshwater per capita per year is estimated at about 1,952 m^3 in 2014; however, this is projected to drop to 1,500 m^3 by 2025.[1] Currently, water resources are not well harnessed and many demands are unmet. Uneven development in key sectors such as hydropower and irrigation has led to underutilization of water resources for economic growth. At the same time, temporal and spatial demands are increasingly challenging as a result of population pressure, deforestation, and unsustainable land and water management in fragile catchment areas. This has led to degradation of the resource base and the livelihoods of the people that depend on it. Tanzania also faces increased risk because of climate variability, which is a growing threat to the sustainability of critical water-using sectors: hydropower, irrigation, mining, tourism, livestock, urban and rural water supply, and the environment. Managing water resources sustainably is therefore now recognized as an urgent priority by the different water-dependent sectors.

3. **While rapid urbanization spurs economic growth, it also places pressure on water resources, which complicates the task of sustaining access to water and sanitation services.** Although still largely rural in nature, Tanzania's population of 45 million (Census 2012), is rapidly urbanizing. The country is expected to increasingly become an urban economy, with approximately 54 percent of its population living in primary and secondary cities by 2030, up from 24.4 percent (11 million) in 2012. With 4.4 million inhabitants in 2012, Dar es Salaam accounts for 40 percent of the urban population and is expected to continue to absorb the bulk of new urban residents. By 2030 it is expected to have over 10 million inhabitants, many of whom will reside in peri-urban areas that are currently underserved. Given its role as the engine of the economy, and the locus of key industries, commerce, the port, the rail and road transport services, it will continue to draw more resources, including water. Keeping up with the demand for provision of sustainable infrastructure, including water supply and sanitation (WSS), is therefore a critical challenge for the city. And more broadly, for the Wami-Ruvu basin (in which Dar es Salaam is

[1] In 2002, Tanzania received an estimated average of 2,300 m^3 per capita of renewable freshwater. This is significantly above the level of 1,700 m^3 per capita denoting water stress, or the 1,000 m^3 per capita denoting water scarcity. However, this average figure does not reflect the temporal (seasonal or annual) or spatial variability of water, which varies greatly across the country. If population projections prove accurate, population growth alone would drop Tanzania's annual renewal rate to 1,500 m^3 per capita by 2025, putting it within the water-stressed category 'United Republic of Tanzania, Water Resources Assistance Strategy Improving Water Security for Sustaining Livelihoods and Growth, February 2006'.

located), where the impacts of rising population pressure and environmental degradation are already being felt.

B. Sectoral and Institutional Context

4. **Tanzania has developed a clear policy and legislative framework that places water resources management (WRM) at the center of planning and decision making.** The 2002 National Water Policy and subsequent water legislation and the regulation stipulate that WRM follows a basinwide approach through which management responsibility is devolved to river/lake basins, catchments, and water user groups through a collaborative, cooperative, and multisectoral approach. Through its Ministry of Water and Irrigation (MOWI), the Government of Tanzania (GoT) has made good progress in developing a sound WRM framework. While the core responsibility for WRM rests with the MOWI and the River and Lake Basin Water Offices (BWOs), it is increasingly recognized that an integrated water resources management (IWRM) approach is required for effective, equitable, and sustainable utilization of water resources. Basin Water Boards (BWBs) for each of the nine basins have therefore been established and the GoT is providing support to enhance their capacity and financial sustainability to manage water resources. To do so, the Integrated Water Resources Management and Development (IWRMD) plans have been completed for six basins (Internal Drainage, Lake Nyasa, Ruvuma and Southern Coast Rivers, Lake Tanganyika, Rufiji River, and Lake Rukwa), and plans are underway for the remaining three: Wami-Ruvu, Pangani, and Lake Victoria.[2] These IWRMD plans aim to reduce the current fragmentation in water resources planning and management, which results in water resources development and use being seen narrowly as a sectoral issue. The aim is to transform this to a multisectoral issue that is central to the performance and long-term sustainability of many sectors of the economy.

5. **Better coordination between competing water resource users is a critical issue that must be addressed at both national and local level.** The implementation of IWRMD plans will require greater capacity to be developed in BWBs. However, to deliver on their mandates, BWBs require adequate resources, modern information databases, and an effective mechanism for supporting management decisions across key sectors. The GoT has therefore established a National Water Board (NWB), constituting key water resource-related sectors (agriculture, energy, industry, forestry, environment, livestock, wildlife, lands, mining, irrigation, fisheries, and infrastructure) and representatives of local government administrations, BWBs, the private sector, and nongovernmental organizations (NGOs), to provide strategic advice to the minister of the MOWI on matters related to multisectoral coordination in integrated water resources planning and management, as well as resolution of water conflicts. However, the effectiveness of the NWB will depend on strengthened BWBs (and support from the MOWI) for information and data, technical backstopping, and multisectoral diagnostics to support cross-sectoral decision making. Ultimately, implementation of these IWRMD plans will depend on decisions regarding the allocation of water resources across sectors and the willingness and ability to enforce them. A high-level multisectoral taskforce has therefore been set up to help improve intersectoral collaboration, inform decision making at the NWB, and help shape an improved institutional framework for decision making. This follows the high-level dialogue between sector ministers and the World Bank leading to the recognition that critical action is required to address the issue.

6. **Over the past few decades, the GoT has invested considerable finances in the development of the water sector, gradually consolidating approaches and broadening impact across the country.** The World Bank has supported this process through a series of investments, including the Rural Water Supply and Sanitation Project (P047762-TZ) implemented between 2002 and 2008. The project piloted

[2] The IWRMD plan for Wami-Ruvu will be prepared under this project (WSSP-II). IWRMD plans for Pangani and Lake Victoria will be prepared with funding from the WSDP-II.

community-based rural WSS service provision; established the institutional framework for decentralized planning and implementation of rural WSS projects; and scaled up community-based rural WSS for 500,000 people in 12 pilot districts. In parallel, the World Bank supported the Dar es Salaam Water Supply and Sanitation Project (P059073) between 2003 and 2010, which aimed to strengthen institutional capacity building and reform the utility; introduce pro-poor community WSS delivery mechanisms; and rehabilitate and extend critical water supply and wastewater facilities. These interventions led to the development of the GoT's Water Sector Development Program (WSDP) in 2006.

7. **The WSDP introduced a multidonor-supported sectorwide approach (SWAp) that encompassed the entire water and sanitation agenda** and was designed to be implemented in several five-year phases, covering a period of 20 years (2006–2025). The WSDP-I, implemented from 2006 to 2015, focused on rolling out legal and institutional reforms, setting the basis for IWRM. It also strengthened the basis for improved access to WSS across rural and urban local governments, including regional centers, urban and municipal towns, and the Dar es Salaam metropolitan area. Through these efforts, the Government has made steady progress in increasing access to services across the country. In urban areas, by September 2015, the MOWI reported that 7.9 million people had access to safe water through 584,473 household connections and 5,836 kiosks and public taps; and 527,000 people were connected to the sewerage system. In Dar es Salaam in particular, 2.8 million people had access to safe water supply through 152,000 domestic connections and 203 kiosks/public standpipes; and about 326,130 people were connected to the sewer network.[3]

8. **Despite commendable achievements to date, the sector continues to face considerable challenges particularly in rapid urbanizing areas such as Dar es Salaam.** Because of inadequate coordination among sector institutions, weak data management and reporting mechanisms, and poor operational inefficiency—as evidenced by the high rate of nonrevenue water (NRW)—levels of access to urban WSS service have declined. By 2015/2016, the NRW rate in Dar es Salaam was as high as 53 percent, and water service coverage at about 55 percent.[4] However, water production capacity which had been constrained as a result of the slow pace of infrastructure development, is now set to increase. With the completion of the ongoing and planned water supply projects under WSDP, daily water production is expected to more than double from the current 300,000 m^3 to 756,000 m^3. While this will allow for significant improvements in water services in Dar es Salaam, ensuring a sustainable outcome will largely depend on whether adequate measures are taken to reduce and control the level of NRW. As additional water is brought on stream, greater pressure will be added to the aging distribution system, and more pipe bursts could occur, leading to an increase in NRW. In addition, higher levels of water supply will need to be matched by improvements in sanitation systems, to avoid potential environmental and health risks. As existing sewer systems currently serve only 10 percent of the city's population, more than 50 percent of fecal waste is currently disposed without treatment—illegally (emptied into storm water drains) or through the largely informal service providers. This has led to environmental degradation and in some instances, to contamination of groundwater supplies and recurrent incidences of diseases such as cholera.

9. **Addressing these challenges will require a more integrated and robust institutional framework for delivery of WSS services in Dar es Salaam.** Currently, responsibility for service delivery is divided between the Dar es Salaam Water and Sewerage Authority (DAWASA), the asset holder, and the Dar es Salaam Water and Sewerage Corporation (DAWASCO), the service provider, under a lease agreement

[3] The World Bank contributed to this first phase of WSDP through its First Water Sector Support Project – WSSP-I (P087154).

[4] EWURA estimates for 2015/2016. According to WHO-UNICEF MDG report 2015 at the end of MDG, 77 percent of the urban population in Tanzania has access to an improved water source and only 31 percent of the population to improved sanitation services.

signed between DAWASA and DAWASCO. Since 2014, the GoT has embarked on an institutional reform initiative to improve the provision of WSS services in the city. The newly proposed institutional arrangement involves changing the mandate, accountability, and relationship between the two institutions, whereby DAWASA will become the bulk service provider and DAWASCO will be responsible for downstream WSS service provision. The lease agreement will be replaced by a performance-based bulk supply agreement. The process of operationalizing this new model is under way and, in the interim, the lease agreement between DAWASA and DAWASCO has been extended and amended to reflect the proposed bulk and retail relationship and to establish the basis for the newly assigned roles and responsibilities of the two institutions. The Energy and Water Utilities Regulatory Authority (EWURA) which has the regulatory responsibility for monitoring utilities performance and regular tariff reviews will play a key role in enforcing these mandates. In addition, it will also be instrumental in ensuring that sanitation services—for which responsibility (in urban centers) is shared between multiple stakeholders: the five municipalities, DAWASA and DAWASCO, the private sector, communities, and households—are clearly assigned and adequately supported.

10. **This project builds on lessons learned from implementation of WSDP-I, by focusing on two critical priorities**: (a) the effective management of the country's water resources, with particular attention to the Wami-Ruvu basin in which Dar es Salaam is located, and (b) improved access to and management of water and sanitation services in the Dar es Salaam metropolitan area. With respect to the former (water resources), the focus will be on improving the capacity for planning and management of water resources in the nine basins, including establishing systems for collection, analysis, storage, advice, and dissemination of water resources data, to improve coordination and collaboration across critical sectors at national, basin, and local levels; integrate planning and implementation of priority infrastructure investments within basins; and ensure that water allocation decisions are based on sound analytics and improved monitoring of the resource base. With respect to the latter (Dar es Salaam WSS), the focus will be on improving water and sanitation services by ensuring greater operational and financial efficiency of the utility and its partners. Among other things, this will require attention to developing institutional capacity enabling the utility to modernize systems, upgrade plant and networks, reduce NRW, promote demand management, and scale up access to services.

11. **The World Bank's continued engagement with the water sector through the second Water Sector Support Project (WSSP-II) is part of a long-term program of support for the GoT's WSDP.** It builds on WSSP-I and will inform the design of future engagements. A summary of the collaborative GoT-World Bank long-term engagement is provided in table 1.

Table 1. World Bank - Overview of Past, Current, and Future Engagement in Water Sector

2007- 2015 (US$ 244.9 million	2017-2022 ((US$ 225 million)	2023-2033
The objective was to support the GoT effort to (a) improve IWRM by strengthening water sector institutions; and (b) expand access to WSS services.	This project will (a) strengthen the capacity for integrated water resources planning and management in United Republic of Tanzania, and (b) improve access to WSS services in an operationally efficient manner in Dar es Salaam.	Support to (a) targeted investments and water management decisions that improve water security, livelihoods, and environmental sustainability in the country's basins and (b) improved access to sustainable WSS to urban and rural people toward meeting the sustainable development goals (SDGs).

Result: - Establishment of institutions and development of enabling environment to lay the foundation for operationalization of the sector institutions for long-term improvement of the sector. The coverage included all aspects of the water sector: IWRM; Rural and Urban Water Supply services infrastructure under a SWAp arrangement.	Focus areas: - Coordination between sector institutions competing for water resources; strengthening institutions to deliver on mandates sustainably - Modern data and information base to inform decision on trade-offs and complementarity for water use - Water conservation in Wami-Ruvu basin where Dar es Salaam's water sources are located - Expand access to WSS in Dar es Salaam and improve water utilities operational efficiency to ensure sustainability of the service	Focus areas: - Institutions capable of delivering within strong legal framework, sustainably financed - Improved public-private partnerships in service delivery - Enforce IWRM planning and allocation in national and regional sector planning and investments - Continued knowledge base and hydromet improvements and improved integration in regional networks - Consolidation of catchment investments in earlier phases - Water security and conservation investments brought to scale to extend WSS investment to improve sustainable access to safe WSS services toward meeting the SDGs.

C. Higher Level Objectives to which the Project Contributes

12. The proposed operation is consistent with the World Bank Group's twin goals of ending extreme poverty and promoting shared prosperity, sustainably. Improving WRM and increasing access to safe water and sanitation are key to improving livelihoods and the health of the majority of Tanzanians, particularly the 28 percent who fall below the basic poverty line. The project will support three interlinked objectives: promoting shared prosperity through support for economic growth; increasing sustainability by protecting the natural resources base on which these goals depend; and ending extreme poverty through support for improved resilience within the basins and improved access to WSS services. The WSS services component in Dar es Salaam, which houses about 40 percent of the country's urban population and is a key economic engine of growth, will contribute to the country's effort to meet the SDG target for WSS.

13. The proposed operation is in line with the World Bank 2012–2015 Country Assistance Strategy (CAS) for Tanzania, which was further extended to 2016 at the time of the CAS Progress Report (CASPR). The proposed project supports the CAS strategic objective of 'Building Infrastructure and Delivering Services'. Under this objective, the proposed activities will contribute to achieving the CAS outcome: 'increased access to and quality of water and sanitation services'. It is also consistent with the increased focus on institutional reforms in the context of investment programs identified in the CASPR. The project is also in line with the priorities identified in the draft Systematic Country Diagnostic (SCD) for Tanzania. Strengthening human capital to raise labor productivity by addressing early childhood development through, among others, access to water and sanitation is one of two foundational areas which the government needs to tackle to support Tanzania's economic and institutional transformation to achieve higher growth as well as inclusion. The project contributes to the goal of the Government of Tanzania's National Five Year Development Plan (2016/17 – 2020/21) to increase the access to water in Dar es Salaam to 95% and reduce NRW to 30%, as well as increase the share of GDP from better utilization of natural resources, including water, by 2020.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

14. The project development objective is to (a) strengthen the capacity for integrated water resources planning and management in United Republic of Tanzania, and (b) improve access to water supply and sanitation services in an operationally efficient manner in Dar es Salaam.

B. Project Beneficiaries

15. **Indirect beneficiaries.** Through its broad support for IWRM, the project will have an indirect benefit on a large number of beneficiaries nationwide, including urban and rural households, companies, public agencies, and the irrigation, tourism, mining, and fisheries sectors. In addition, strengthened institutional and regulatory frameworks, including implementation of comprehensive plans for IWRM and development, will lay an important foundation for efficient and harmonized utilization of water resources.

16. **Direct beneficiaries.** An estimated 1.87 million people will benefit from the project intervention, including 700,000 residents of Dar es Salaam living in the areas of project interventions who will directly benefit from the expansion of the water distribution system, the small pipe systems, and improvement in NRW; about 130,000 people who will benefit from the new sewerage system at the Mbezi beach catchment; about 1 million people who will have access to safe sanitation services from 50 decentralized fecal sludge management (FSM) units; and about 20,000 people who will benefit from provision of decentralized sewerage. Poor households in Dar es Salaam, particularly, women and girls, will be the primary beneficiaries of improved services. This will lessen their burden and afford them more time for education and economic activities. Other direct beneficiaries include an estimated 15,000 rural households that will benefit from improved micro-watershed management in 20,000 ha of land within the Wami-Ruvu basin.

C. PDO-Level Results Indicators

17. The proposed PDO indicators are the following:

(a) Key investment decisions (project approvals) incorporating water resources management considerations (number)

(b) Basins with water resources data available to the general public in real time (number)

(c) BWBs fully operational and implementing an approved plan for the integrated basin water management (number)

(d) People provided with access to improved water sources under the project (number)

(e) People provided with access to improved sanitation facilities under the project (number)

(f) Reduction of Non-Revenue Water (million m^3 per year)

(g) Direct project beneficiaries (number), of which female (percent), of which poor (percent)

III. PROJECT DESCRIPTION

A. Project Components

18. The project will support the GoT's efforts to manage water resources sustainability to address the country's growing demand on water for development and protect this vital resource from further

degradation. The project will advance efforts to ensure integrated and climate resilient investment planning in all nine basins by improving stakeholder involvement, institutional coordination, and capacity building for water resources and land use management. It will contribute to improving the knowledge base, develop management tools, and modernize system operations in critical basins; refine basin plans prepared under WSDP-I; and introduce watershed management investments in hotspot areas within the Wami-Ruvu basin. In line with this, efforts to improve integrated urban water management (IUWM) within Dar es Salaam will also be supported. These activities will help to improve water conservation, water quality, and overall water security in the basin.

19. In view of the vital role that Dar es Salaam plays in the national economy, the project will contribute to improving WSS services. Support for ongoing institutional reforms will aim to clarify institutional mandates, responsibilities, and accountabilities for water and sanitation services and enable DAWASA and DAWASCO to take up their respective roles. Technical assistance (TA) for further refinement of the draft bulk water supply contract will be provided to improve its alignment with the business plan, performance indicators, incentive mechanisms, and risk analysis and mitigation plans. For the sanitation sector, mechanisms for coordination and delegation of roles and responsibilities to other partners will be refined; and the design of a joint monitoring arrangement with municipal and other stakeholders prepared (for example, for IUWM). These institutional reforms will be complemented by measures to improve operational efficiency and modernize operations. In particular, capacity for NRW reduction and management as well as in the operation of large sewerage systems will be increased by collaborating with the private sector through a performance-based contract (PBC) for NRW, and a design, build, and operate (DBO)[5] contract for the new Mbezi wastewater treatment (WWT) plant. The project will also include a capacity building and research component, in collaboration with the water institute and key universities in Tanzania.

20. The project will also contribute directly to improved access to clean water supply and safe sanitation in Dar es Salaam—extending the water supply distribution network and sanitation system to unserved areas of the city. Where appropriate, small piped water supply (SPS) systems and a mix of low-cost sanitation solutions will be supported to ensure that low-income areas affected by recurrent cholera outbreaks have better access to WSS services. To this end, a local media campaign to promote behavioral change and infrastructural outcomes will be supported. In addition to the expansion of sewerage from 10 percent to 30 percent by 2030, on-site/off-grid solutions, will be developed for approximately 6.3 million people. About 315 off-grid FSM systems, each servicing 20,000 people for a capital investment of US$32 million will be required. As the pace of implementation will be determined by success in land acquisition and community buy-in, the project will initially support 50 FSM systems to enable learning by doing and allow for incremental improvements as results are achieved. Gaps in local experience and expertise will be filled through TA and exposure to successful interventions elsewhere.

21. The project will finance the following four components: Component 1: Integrated Water Resources Management (IWRM); Component 2: Dar es Salaam Water Supply Improvement; Component 3: Dar es Salaam Sanitation Improvement; and Component 4: Project Management and Implementation Support. A detailed description is included in annex 2.

22. **Component 1: Integrated Water Resources Management (IWRM) (US$50 million equivalent).** The three subcomponents described below support strategic and operational decision making on WRM across sectors. Recognizing that it is important to shift from a more inward-looking institutional building phase to an outward-looking approach—the focus of the component will be on improving the institutions

[5] The DBO option will allow for the involvement of the contractor in the operational phase, to enable hands-on training for DAWASCO staff and a smooth hand over to DAWASCO after the contract is completed.

(coordination, monitoring, regulation, and enforcement); the information base (hydromet, operational decision support, forecasting); and the investments that support growth in water-dependent sectors.

23. **Subcomponent 1.1: Strengthening WRM Institutions (US$13.3 million equivalent).** This subcomponent aims at strengthening institutions responsible for the IWRMD, including BWBs, the NWB, Catchment Committees (CCs), Subcatchment Committees (SCCs), Water User Associations (WUAs), and the MOWI, and other stakeholders to adequately deliver on their mandate (support financial sustainability, capacity enhancement, performance management, and cross-sectoral collaboration). This will involve national-level reforms for all nine basins, as well as specific actions in the basins, with particular focus on the Wami-Ruvu basin in which Dar es Salaam is located. The support under this component is targeted at performance improvements, as monitored through the performance assessment framework (PAF) for BWBs and actual decision making at the NWB. This will enable multisectoral coordination and support different sectors in tackling their water resources problems. Success in this component is predicated on continued strong political support and meaningful access to information for decision making. Enforcement of water management decisions, licenses, and permits will be critical and supported.

24. Key activities are as follows: (a) support to the institutional and physical set-up and functioning of a Water Resources Center of Excellence (CE) to support the NWB and BWBs with multi-sectoral analysis and strategic policy support. The aim of this Center is to bring together professionals from the different sectors to jointly address complex multi-sector water problems and thus provide well diagnosed and broad-based advice to the NWB for decision making. The center will also undertake instrument calibration of hydromet equipment; (b) establishment of WUAs and Catchment/Sub-catchment committees; (c) a sustainable financing options study for all of the BWBs (financed under the project preparation facility); (d) construction of Water Quality Laboratory, Wami-Ruvu Basin Water Board Offices and provision of office/laboratory equipment at Morogoro; (e) information and data consolidation on water resources, nationally and at basin level, both from basin planning as well as a water quality information system, and accreditation for laboratories; (f) roll-out of the communication strategy on WRM at basin and national level based on the implementation and continuous update of IWRMD Plans in all basins; (g) TA and support to targeted multisector diagnostics on critical WRM issues in the country, with a focus on Wami Ruvu basin – this will include: improving the hydromet information base, the baseline and multi-sector demand projections and assisted water basin modeling to assess multi-sector trade-offs, alternative scenarios, and optimization of investment and management decisions; and (h) development of the Wami-Ruvu IWRMD plan and support for the implementation (excluding investments) of key WRM measures in other BWBs.

25. **Sub-component 1.2: Improved WRM Information - Hydromet Services (US$ 15.5 million equivalent).** This sub-component will support the improvement of the knowledge base on water resources in Tanzania and operationalize improved WRM practices in key sectors, most notably agriculture, energy, disaster management, water supply and environment. It will support the efficient and effective collection, storage, analysis and wide dissemination of credible data and knowledge products for a range of WRM needs. A comprehensive use-driven approach will be introduced; institutional and financial sustainability of the system supported; and open access to data and services enabled. This sub-component finances the following activities: (a) modernization of the Water Resources Monitoring Network and instrumentation for (near) real-time monitoring of weather, water levels, flows, water quality, groundwater, and sediment loads; (b) development of an operational decision support system (ODSS), including data management, visualization, forecasting and early warning as well as system operations; (c) dam safety instrumentation to implement dam safety regulation developed under WSDP I (d) aquifer mapping surveys (e) Water Quality Assessment through preparation of Laboratory Information

Management System (LIMS); and (f) institutional reform around critical hydro-met functions and collaboration between MoWI and Tanzania Metrological Agency (TMA) for long term sustainability of hydromet service provision.

26. **Subcomponent 1.3: Water Security and Conservation (US$21.2 million equivalent).** This subcomponent will support a broad-based conservation program by WUAs and BWBs, as well as targeted investments in the Wami-Ruvu basin. A work program for WUAs and the BWB will be developed in line with their core functions, and based on benchmarked annual work plans. Direct investments in the Wami-Ruvu basin will be based on the IWRMD plan for Wami-Ruvu which is to be developed and endorsed by sectors, and will be complemented by a strategic environmental assessment. Subcomponent activities in Wami-Ruvu will include (a) detailed participatory planning on targeted investments in the IWRMD plan including catchment conservation, small category 'B' water resources infrastructure (including check dams, small earth dams, ponds, sand dams, gully control works, diversions, riverbank stabilization and river training, catchment protection, infiltration works, and so on); (b) TA for annual work planning, empowerment, and performance monitoring of the WUA-level IWRMD activities; (c) coordinated water resources and land use planning and enforcement activities in targeted subcatchments in Wami-Ruvu; (d) engineering supervision for works and contracts for works; (e) equipment for WUA and community works; (f) preparation of future priority investments in water resources for the investment pipeline; and (g) and introducing IUWM practices in Dar es Salaam. While relatively larger investments under (a) and (f) will depend on the completion of the IWRMD plan for Wami-Ruvu, smaller-scale conservation activities are no-regret interventions that can be implemented based on the diagnostic work on the basin and will start from the beginning of the project.

27. **Component 2: Dar es Salaam Water Supply Improvement (US$87 million equivalent).** Through investments made under the WSDP, the production capacity for Dar es Salaam is expected to double. The subcomponents below therefore focus on improving the operational efficiency of the utility; enabling expansion of water supply access; and building a sustainable institutional framework for the management of water supply in Dar es Salaam. Component financing includes GoT contribution of US$1 million equivalent.

28. Activities will support the expansion of water supply services (Subcomponent 2.1); performance-based NRW reduction (Subcomponent 2.2); the institutional restructuring/reform of WSS services as well as improvements in operational efficiency and modernization of the utilities (Subcomponent 2.3). As the scale of investment requirements for expansion of the water supply network to all unserved areas in Dar es Salaam (US$284.00 million) exceeds the project financing envelope of US$56 million, the project has been designed to allow for an eventual scale up.[6]

29. **Subcomponent 2.1: Expansion of Water Supply Distribution in Unserved Priority Areas (US$57 million equivalent).** This subcomponent will finance expansion of the water supply distribution system and off-grid WSS systems for areas that are not yet covered by the water supply network. The following activities have been identified for financing under this subcomponent:

(a) **Water supply distribution system rehabilitation and expansion (US$51 million equivalent).** This includes two packages of designated works planned for Dar es Salaam. Part one (packages 2B and 2F) (Tegeta-Mpiji and Mpiji-Bagamoyo) is a key priority for expansion given current low levels of service. This activity will install an additional, 1426 km of pipes, 42 kiosks, and 214 stand posts and benefit 453,000 people.

[6] The entire program has been grouped into five packages to allow sufficient flexibility for the GoT to scale up implementation as and when resources become available within or outside the project.

(b) **Off-grid water supply in unserved priority areas (US$6 million equivalent).** This activity provides water supply services to about 100,000 people of Dar es Salaam, who are not connected to the formal network. The proposed solutions for this population include decentralized interventions, which can be integrated with the overall network as it expands in the future. In areas, where the existing grid network is not available, independent stand-alone SPS systems would be implemented.

30. **Subcomponent 2.2: Performance-Based NRW Reduction in Dar es Salaam (US$20 million equivalent).** This subcomponent will ensure that the Dar es Salaam utility receives the full benefit of the additional production capacity developed under WSDP. Improvements in operational efficiency will be made, including measures to manage demand and reduce losses. Through a performance-based NRW contract, a leakage reduction program will be carried out in targeted locations within Dar es Salaam to improve services (for approximately 1 million people) and save enough water to serve more people in adjacent areas. The scope of the PBC will include creation of district metered areas (DMA), preparing an accurate customer database, reducing physical losses, and establishing an NRW management system. Payments will be made on the basis of demonstrated reductions in leakage.

31. **Subcomponent 2.3: Institutional Restructuring/Reform and Utility Modernization (US$10 million equivalent).** This subcomponent will support the ongoing reform of the Dar es Salaam WSS institutions to ensure that they have the capacity and institutional and legal mandate to deliver services effectively. Activities will (a) facilitate the ongoing restructuring of DAWASA and DAWASCO, and (b) strengthen their operational performance following the adoption of new roles as bulk supplier and distribution companies, respectively. This will focus on (a) the legal and organizational aspects of the bulk supply contract, (b) business planning, (c) operations and maintenance (O&M) of water and WWT plants, (d) improved network management, (e) NRW management, (f) energy saving measures, and (g) improved customer metering and billing and collection.

32. **Component 3: Dar es Salaam Sanitation Improvement (US$84 million equivalent).** As the quantity of water distributed in Dar es Salaam doubles, greater attention to sanitation services will be required. The following subcomponents will support expansion of sanitation services through construction of a new WWT plant and additional sewer lines in the Mbezi beach area and a range of decentralized sanitation solutions for the unserved part of the city. Component financing includes GoT contribution of US$4 million equivalent.

33. **Subcomponent 3.1: Wastewater Treatment and Sewerage Investment (US$67 million equivalent).** This activity will finance construction of a 16,000 m^3 per day capacity modern WWT plant in the Mbezi beach area; and the associated trunk sewer network to support 26,000 household connections and serve 130,000 people. A DBO approach will be used for the new WWT plant to fill the capacity gap and ensure that the system is managed and operated efficiently.

34. **Subcomponent 3.2: Off-Grid Sanitation (US$17 million equivalent).** In areas without access to sewers, activity will support installation of improved toilets; safe emptying and transportation of the waste to a treatment facility; and treatment and safe disposal of treated waste into the environment. This will include piloting decentralized systems and other new technology (see annex 2 for detail description).

35. **Component 4: Project Management and Implementation Support (US$9 million equivalent).** This component will provide capacity building and TA to strengthen the ability of the Program Coordination Unit (PCU), the Procurement Management Unit (PMU), and departments in the MOWI and implementation agencies (DAWASA, DAWASCO, BWOs) to carry out and manage the project. Overall coordination of the project will be carried out by the PCU, which will be responsible for overall

coordination of project planning, reporting, and supervision. The PCU will oversee activities that cut across divisions and implementing agencies (IAs). Under WSDP-II, the MOWI is hiring a project management firm to support implementation and build program implementation capacity in the MOWI and IAs (reporting, monitoring and evaluation [M&E], procurement, financial management [FM]) including under WSSP-II. The EWURA and the regional secretariat will also be provided capacity-building support to enable them effectively contribute to project implementation.

B. Project Costs and Financing

36. The proposed Investment Project Financing operation amounts to US$230 million (US$100 million from an IDA credit and US$125 million from the IDA scale up facility). The GoT will contribute US$5 million in compensation costs (land acquisition and project-affected people). Table 2 shows allocation of project resource by components.

Table 2. Summary of Project Cost and Financing (Excluding Value Added Tax)

No.	Project Components	Project Cost (US$, millions)	IDA Financing (US$, millions)	GoT Contribution	% Financing
1	**Integrated Water Resources Management (IWRM)**	**50**	**50**	**—**	100
1.1	Strengthening WRM Institutions	13.30	13.30	—	100
1.2	Improved WRM Information - Hydromet Services	15.50	15.50	—	100
1.3	Water Security and Conservation	21.20	21.20	—	100
2	**Dar es Salaam Water Supply Improvement**	**87**	**86**	**1**	98.85
2.1	Expansion of Water Supply Distribution in Unserved Priority Areas	57	56	1	98.25
2.2	Performance-Based NRW Reduction in Dar es Salaam	20	20	—	100
2.3	Institutional Restructuring/Reform and Utility Modernization	10	10	—	100
3	**Dar es Salaam Sanitation Improvement**	**84**	**80**	**4**	98.24
3.1	Wastewater Treatment and Sewerage Investment	67	65	2	97
3.2	Off-Grid Sanitation	17	15	2	88.24
4	**Project Management and Implementation Support**	**9**	**9**		100
	Total Project Costs	**230**	**225**	**5**	97.82
	Project Preparation Facility		**1.724**		
	Total Financing Required Including contingencies	**230**	**—**		

C. Lessons Learned and Reflected in the Project Design

37. Implementation of WSDP-I identified the following key lessons, which informed the design of the second phase program.

- **Strengthen coordination for effective and IWRM.** WSDP-I focused on institutional strengthening and initiating basin wide multisectoral planning. This was an important stage

in the development of the new institutional framework for the sector. However, several constraints were there during the early stages of implementation including insufficient attention to outcomes, lack of adequate coordination, a focus on instruments rather than systems, delays in the preparation of the IWRMD plan—which affected prioritization of investments, and unavailability of real-time data for public use. Institutional strengthening will continue under this project; however, in line with the lessons learned, the focus will shift to functional performance rather than establishment of institutions; delivering results on the ground by implementing the IWRMD plans; improving stakeholder and public access to data and information and knowledge products; and facilitating informed investment decision making. These will be strengthened (or established) and engaged in the implementation of the IWRDM plans going forward. The imminent Big Result Now Agriculture Program, which focuses on improving irrigation efficiencies in a large number of schemes and the catchment conservation elements of the proposed natural resources management (NRM) project for Rufiji basin provide a platform for cross-sectoral collaboration and mutually reinforcing investments.

- **Strengthen WSS service delivery institutions.** Despite several decades of investment in Dar es Salaam, WSS service provision and management is in a poor state. While the GoT is in the final stages of completing major investments in scaling up water production for the city of Dar es Salaam, a key lesson is that without the necessary improvement in the operational efficiency of the Dar es Salaam utility and its partner institutions, the supply of additional water to the city will not lead to the expected benefits. In support of the GoT's ongoing institutional reforms, the project will facilitate finalization of the DAWASA-DAWASCO bulk services agreement; modernization of the utility; and innovative approaches to service delivery and operations—including options for engaging the private sector. Mechanisms for improving collaboration between agencies involved in WSS service delivery within Dar es Salaam are also critical.

- **Address low implementation agency capacity.** The capacity of IAs in the areas of procurement, contract management, FM, and safeguards must be strengthened for them to properly deliver on their increased, and more complex responsibilities. Under the decentralized implementation arrangements, there is also a need to strengthen the implementation and monitoring capacity at the decentralized level with additional technical expertise and public and private partnerships at the local level. For the WRM component, a more devolved approach to WRM will empower these agencies as well as increase the efficiency of fund flows. For the WSS component, the role of decentralized agencies in managing delegated or off-grid infrastructure will be supported through appropriate contractual and regulatory arrangements.

- **Collaboration across sectors.** Better collaboration across sectors including Water, Agriculture, Social Urban Rural and Resilience, and Environment, is required within the Government and its development partners, such as the World Bank. These must be strengthened to align outcomes across the country. Specific-sector investments, such as those under the Southern Agricultural Growth Corridor of Tanzania or Catalyzing Future Agri-Food Systems in Tanzania, where irrigated agriculture investments are screened and supported within a basin management framework are an example. It is only through greater collaboration of those engaged in supporting sector investment programs and promoting the IWRM agenda that coherent and co-owned decisions integrated across national, basin, and sub-basin entities can be taken.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

38. WSSP-II will be implemented at national and local government, basin and sub-basin, Dar es Salaam and ward levels and involve a range of stakeholders and beneficiary communities. Overall coordination of the project will be carried out by a PCU, which will be responsible for overall project planning, reporting, and supervision. The PCU will also oversee coordination across divisions and agencies within the WSDP implementation framework. A project management firm will be hired to support the PCU and build the MOWI's program implementation capacity (reporting, M&E, procurement, FM).

39. **IWRM component.** This component will be implemented at the national and basin levels. At the national level, the primary implementing bodies will be the water resources and water quality divisions of the MOWI in collaboration with sector ministries, as well as the TMA on hydromets. At the basin level, the BWOs will be the primary institutions responsible for managing the implementation of the IWRMD plans and basin-level project activities, and in particular in the Wami-Ruvu basin, the BWB will be coordinating the various sectors interventions in the basin. The WUAs, CCs, and SCCs will also be responsible for implementation of the community-level project activities in coordination with Local Government Authorities (LGAs) and sector institutions, such as irrigation committees, hydropower operators, and utilities. The project provides support in terms of TA and implementation service provision for key activities under this component, including the rollout of the WUA work program across the country and the more intensive program of investments with the Wami-Ruvu BWB.

40. To facilitate integration within the sector, a Memorandum of Understanding (MOU) outlining joint responsibilities will be signed between the MOWI and agencies that will be tasked with carrying out specific activities (for example, BWBs, LGAs, and water utilities). These arrangements and the requisite tools (sample MOU, reporting formats, and so on) will be detailed in the Project Implementation Manual (PIM), which is a live document and will be updated periodically to adapt to changing circumstances. In addition, the NWB will be strengthened to deliver on its mandate. As the NWB comprises multiple 'ex officio' representatives, the proposed Center of Excellence will be established to improve water resources data management and analytical capacity. It will be tasked with policy advice on multisector strategy issues and will have direct functional relationships with the different sector agencies. It will also be answerable for its coordination mandate to the NWB; and will therefore complement the administrative secretariat function of the Water Resources Division, by becoming the technical secretariat and multisectoral 'think-tank' for the NWB. The project will explore subsidiary legislative reform to strengthen the legal mandate of the NWB. It will also support the ministry in providing technical guidance and analytical support to BWBs on multisectoral decision making at the basin level.

41. **Dar es Salaam component.** This component will be implemented by DAWASA and DAWASCO with technical support from the MOWI urban water supply division for the institutional reform activities. The MOWI is hiring a program management consulting firm to support in program management and implementation including in contract management and implementation support to the large contracts in DAWASA and DAWASCO. The Program Management Firm (PMF) will also play a key role in facilitating the preparation and update of MOUs and the bulk water contract/agreement between DAWASA and DAWASCO. For sanitation, in addition to DAWASA and DAWASCO, the five Dar es Salaam municipalities will be engaged in supporting aspects of the program, including behavioral change campaigns and the introduction of IUWM.

42. A description of the implementation arrangements for each component is provided in annex 3.

B. Results Monitoring and Evaluation

43. All agencies involved in implementation of the project will participate in the process of data collection, compilation, analysis, and use. The MOWI planning and policy department will be responsible for collating and presenting this information in results monitoring/implementation progress reports to be prepared regularly by each of the directorates involved in implementation, and by DAWASA and DAWASCO. Formats for such reports will be aligned with those used for the broader sector development program to ensure that each IA will also use these regular M&E reports for internal and broader sector reporting as part of the regular reports prepared within the sector dialogue framework. In addition, the option of using data from the PBC to strengthen the Geographic Information System (GIS) and create a dashboard for monitoring operational efficiency of the utility will be assessed.

44. The baselines for results monitoring in DAWASA and DAWASCO will be established and progress monitored on an annual basis. But for specific investments under the water resources component, baselines will be determined on a rolling basis, as and when the specific investments to be supported by the project are known. The exact nature and number of investments carried out under the project will only be known once catchment action plans are prepared in participating basins/sub-basins and feasibility studies are prepared starting from the first year of the project.

45. In addition, to enable an impact evaluation of particular project interventions, a baseline survey will be carried out (both the treatment and control units will be surveyed) before the intervention and an end-line survey will be carried out after the implementation is complete and after allowing for sufficient time for the effects to be visible.

C. Sustainability

46. **IWRM.** Building on activities carried out under WPSD-I, the project will strengthen institutional development of BWBs and other entities engaged in IWRM and the institutions engaged in Dar es Salaam water and sanitation service delivery. To address the issue of long-term financial sustainability, the project will provide assistance to the MOWI in analyzing institutional and financial aspects of basin management, including possible management, financing, and cost recovery options. Of specific interest is the financial sustainability and fiscal burden of the proposed hydromet reform, with its focus on improved and free and open data. Although in terms of direct cost, the proposed institutional setup and water resources monitoring system is more expensive than the current setup, its benefits are considerable in the longer term through improved service delivery and reduced transaction costs in communication and data management. Most importantly, better design of water related hardware investments and priority setting will enable the GoT to capitalize on the positive outcomes of effective decision making. It is anticipated that many of these functions can be sustained with only a modest increase in budget allocation; and agility and efficiency in data management will be a key consideration in choosing options for data collection, communication, storage, and processing.

47. **WSS Services in Dar es Salaam:** For Dar es Salaam WSS, ongoing reforms aimed at improving operational efficiency and increasing financial viability of the utility will be supported. In support of the bulk services agreement between DAWASA and DAWASCO, each agency will be provided with the necessary support for business planning, tariff setting, NRW reduction and management, customer management, and incentive mechanisms to ensure sustainability. Reduction and management of NRW and satisfying customers demand will significantly improve the utility's revenue base and sustainability. In addition, a performance contract based on agreed key performance indicators (KPIs) will be signed between DAWASA and DAWASCO and their respective management board to enable more cost-effective and efficient implementation.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

48. The overall risk level of the project is Substantial. The program will involve multiple IAs and be implemented under a decentralized implementation arrangement. Implementation of the basin IWRMD plans will require strong coordination among water using sectors and their respective development plans. These coordination mechanisms are evolving albeit at a slow pace. The project is supporting reform of the Dar es Salaam water and sewerage services utilities. As the reform involves a shift in mandate and accountability of the institutions, there are substantial risks associated with the process of introducing any new legal requirements and making the requisite organizational changes, staffing decisions, and assignment of assets, debts, and liabilities. These require in-depth analysis and high-level decisions, posing the risk of implementation delays. In addition, capacity to effectively implement fiduciary aspects of the program (procurement, contract management, and FM aspects) and environment and social safeguards requirements is limited. A combination of these operational factors point to substantial risks for the project implementation. As the roles and responsibilities for provision of on-site sanitation are shared between multiple institutions that are not well coordinated and experienced in provision of decentralized sanitation solution covering the complete sanitation chain (containment, emptying, transporting, treating, and discharging/reuse), substantial challenges may also arise in off-grid sanitation service provision and management, which is evolving as a new experience and requires regulations to facilitate smooth implementation and management of the facilities. Absence of clear regulation for allocation of land to these facilities poses substantial risk to effective implementation of the activities. The project will support intensive awareness raising and consultation with the local authorities and communities. These risks will be mitigated by providing substantial TA to bring international experience to the client and through the PCU and the PMF.

49. **Institutional capacity for implementation and sustainability (Substantial).** The low capacity for overall program management may affect implementation of the project. To mitigate these risks (a) the PMF being hired for the MOWI will support DAWASA and DAWASCO; (b) a financing option study will be conducted to identify and implement the feasible options to ensure basin offices establish sustainable financing sources; (c) DAWASCO and DAWASA will engage international experts to provide TA to establish a system for NRW reduction and management, (d) the project will support definition of sanitation responsibilities and establishment of coordination mechanism among the various players; (e) DAWASCO's customer management and complaint response system will be strengthened with modern technology; (f) a structured performance management program for BWBs has been set up under WSSP-I in collaboration with German Agency for International Cooperation (GIZ) and this PAF determines capacity strengthening during and after the program for core functions in addition to their financial sustainability; (g) under the WRM component, WUAs are supported in their core functions through an annual work program, to enable them to build confidence and capacity to carry out their mandate. With TA and financial support this will strengthen institutional performance and sustainability.

50. **Sector strategies and policies (Substantial).** The water sector has a national water policy, water sector development strategy, and WRM act that are guiding the performance of the sector. However, effective implementation of these strategies has been a challenge because of weak capacity for enforcement of regulations. The project will strengthen implementation of policies and legislation through support for national- and basin-level interventions (for example, capacity building for enforcement of regulations with respect to effective water allocation between the various water users through licensing and monitoring of water use permits).

51. **Fiduciary (Substantial).** There are capacity weaknesses in procurement, internal control/audit procedure, and contract management. Key weaknesses in procurement include (a) inadequate knowledge of procurement planning, preparation of bidding documents, evaluation of bids leading to delays in the procurement process; (b) weak record keeping; and (c) lack of adequate tracking and controls. Weaknesses in FM include: accounting software of DAWASA and DAWASCO not being able to generate project financial reports directly from the system; vacant managerial positions in the finance and accounts department of DAWASCO; limited staff knowledge in DAWASCO regarding the World Bank FM and disbursement guidelines; and weak internal audit capacity. To mitigate these fiduciary risks, capacity-building interventions will be financed under the project and required staff will be hired by the IAs to fill the capacity gap identified during the FM and procurement capacity assessment.

52. **Social and environment safeguards management (Substantial).** The safeguards unit established in the MOWI is responsible for monitoring of safeguards compliance under the larger WSDP, which has broad countrywide coverage and a large number of subprojects requiring a stronger safeguards management team. The unit in the MOWI will be strengthened with national and international safeguards advisers and experts to support the overall program; other IAs will assign a focal point for safeguards; intensive capacity-building support will be provided to strengthen staffing and working environment; and the Government will be required to budget adequately for land acquisition and resettlement, and enhanced implementation support from the World Bank. All the IWRMD plans will be subject to a strategic environmental and social assessment, which will further provide the baseline and framework for incorporating environmental and social safeguards in all investments to be supported.

53. **Stakeholder (Substantial).** The project involves a number of stakeholders thus requiring effective coordination both vertically among institutions at different administrative tiers and horizontally between the various sector ministries. Lack of such coordination will put successful implementation of the project at risk. To mitigate this risk, the project (a) will strengthen the existing multisector NWB, (b) will support the establishment of institutional mechanism to strengthen the collaboration between the various ministries, and (c) will collaborate with the 2030 Water Resources Group which facilitates broader stakeholder participation—including the private sector—in the IWRM and development initiatives.

54. **Others.** The project has been screened for climate and disaster risk and rated as 'Moderately Exposed'. However, extreme precipitation and flooding were identified as historical and current drivers of risk and drought as a future driver of high risk. The IWRM component mainly aims to support integrated climate resilient investment planning in the basins, including institutional coordination and capacity building to plan and manage water resources and land use at a basin level.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

55. Over the past few decades, the GoT has invested considerable finances in the development of the water sector, gradually consolidating approaches and broadening impact across the country. The project finances infrastructure for basic services and corresponding institutional development and capacity building to create conducive policy environment and establish public goods such as reliable data, efficient management of natural resources, and improved service delivery. These are key enabling environments that will need to be developed further to attract the private sector in financing interventions in the sector. The Bank brings significant value added in terms of providing comparative global perspectives on water sector developments and its ability to support the Government in adapting these to the Tanzania context. The Bank has extensive technical expertise and can contribute concrete and relevant policy and implementation experience for the development of Tanzania's water sector. The

WSS services component in Dar es Salaam, which houses about 40 percent of the country's urban population and is a key economic engine of growth, will contribute to the country's effort to meet the SDG target for WSS.

56. The economic and financial analysis assessed the economic and financial benefits and related costs arising from selected activities implemented under Component 2: Dar es Salaam Water Supply Improvement[7] and Component 3: Dar es Salaam Sanitation Improvement.

57. The results of the economic and financial analysis show that the project is economically and financially viable with economic returns of US$180 million and US$329 million, respectively, when a 10 percent rate of discount is used. The financial internal rate of return (FIRR) is 19.7 percent and the economic internal rate of return (EIRR) is 28.6 percent. These detailed analysis are documented in the project file.

58. The economic analysis evaluates the economic impact of improvements in WSS access in the Dar es Salaam service area, Tanzania. The cost-benefit analysis estimates the economic/financial feasibility of the project by calculating the net present value (NPV) of cost and benefit streams and by determining the EIRR/FIRR of the project. The net benefit of the project was estimated as the incremental benefit of two scenarios: with and without project situations. The with project situation included the proposed investment program under Components 2 and 3. The without project situation assumed that the proposed investments under Components 2 and 3 are not undertaken and therefore the proposed expansion in the number of connections will not be undertaken.

59. The expected benefits of the project are the economic/financial costs that will likely be avoided as a result of the project. Calculation of these benefits involves (a) examination of statistical and economic data of past costs arising from water-related illnesses; (b) estimation of the likely frequency and severity of potential future occurrence of diarrhea incidence in targeted population; (c) estimation of future economic costs of these incidences; (d) estimation of the share of these costs that can be avoided as a direct consequence of project implementation; and (e) estimation of the time savings because of reductions of time fetching water because of a new connection and/or because of longer hours of water supply.

60. The economic analysis concludes that the EIRR of Component 2 and 3 is at least 28.6 percent, based on rather conservative assumptions. This estimate excludes many socioeconomic dimensions of the project benefits that are difficult to quantify in monetary terms because of their nature or for which there is no data available. This EIRR exceeds the assumed opportunity cost of capital of 10 percent that is expected for this kind of project, and therefore the project's investments can be considered sound. The NPV of the benefit stream over the project's time horizon is about US$180 million, assuming a discount rate of 10 percent. The economic benefits estimated by this economic analysis relate to improvements in water distribution systems and decreases in NRW. The rehabilitation and expansion of water supply distribution and sewerage/sanitation systems will have a positive impact on the incidence of waterborne-related diseases (direct and indirect), will reduce the time of collecting water by project beneficiaries, and will increase the global water demand. The NRW investments will lead to a greater amount of water

[7] Support under Component 1 (Integrated WRM) of the project is equally critical for ensuring appropriate WRM: the development of the knowledge base and modeling/analytical tools, in addition to the enhancement of the water information system (including upgrading the hydrometeorological network) will provide the basis on which economic and financial aspects can be analyzed in the investment planning process. However, at present the benefits derived from Component 1 are difficult to quantify because of the lack of data and/or its qualitative nature. Because of the major importance of the IWRM component, qualitative analysis is performed to assess the respective benefits.

billed and collected and costs savings associated with the production and treatment of water that would otherwise be lost.

61. Besides direct preventable economic losses, there are many other potential benefits that are not factored into the cost-benefit analysis described here. This is either because estimating such benefits is difficult due to the lack of data or it is challenging to quantify the value of those benefits because they might not be financial or economic in nature; for instance, improved water supply provides comfort and dignity. For instance, some of the benefits excluded are the impact of the project on women and girls; and, the expected decrease in the morbidity and mortality rates not associated with diarrhea incidence. Therefore, the estimated benefits of the project described in this analysis can be considered conservative and it can be reasonably assumed that the actual benefits will be greater than the ones estimated by this economic analysis.

62. A sensitivity analysis was carried out to measure the impact on the economic results when changes on the production and treatment costs and NRW reduction forecast occur, as well as the impact of using different discount rates. Given the benefits accounted for in this economic analysis, changes in certain parameters do not compromise the economic viability of the project.

63. Results of the financial analysis show that the project is financially viable when the utility expands access to services and fully implements the NRW program. Under the set of assumptions considered, the FIRR of the activities considered under the financial analysis is 19.7 percent and the NPV is US$29 million.

64. The benefits of the project were measured in financial terms as the increase in revenue for DAWASCO and DAWASA. Revenues were measured as volume of water billed times the average tariff per cubic meter, and then affected by the collection revenue rate of 90 percent (that is, no increase in revenue collection was assumed). No tariff adjustments were assumed for the financial projections.

65. A sensitivity analysis was carried out to measure the impact on the financial results when NRW reductions occur. The variation could imply achieving additional improvements or, on the contrary, missing some of the assumed targets. Also, the financial impact of using different discount rates was evaluated. From the financial point of view, the project becomes unviable when there is a 10 percent increase in the costs of production and treatment and when a 15 percent discount rate is used.

B. Technical

66. **WRM component.** The project preparation included several technical assessments to help shape project design and builds on key lessons from WSDP-I (see section VI.C. Financial Management) and parallel programs in the wider sector.

67. **Basin planning.** Priority activities are based on the integrated assessments in the IWRMD plans. The approach proposed is to build on this and further build a comprehensive knowledge base and decision-support tools and ensure that measures for institutional coordination are pragmatic and in line with international good practice.

68. **Hydromet services.** Appropriate international expertise has also been brought to bear on assessing the needs for improvement in the hydrometeorological networks, and the proposed design is user-oriented, in line with principles of open access and sustainability.

69. **Watershed management.** Preparation has built on regional lessons from Lake Victoria Environment Management Project (LVEMP)II and, together with the multisector taskforce and preparatory activities under Resilient Natural Resource Management for Tourism and Growth (REGROW), builds on local experience and global good practice to provide NRM and livelihood benefits. A modern M&E system has also been proposed in this regard.

70. **Investments in water supply distribution, sewerage network expansion, and treatment and sanitation in unserved priority areas.** As a result of investments made under WSDP-I, an additional 204,000 m^3 of water for supply every day to the Dar es Salaam service area will shortly become available. In addition to this, the Kimbijji/Mpera groundwater well field is under development with estimated yield of 260,000 m^3 per day. Timely rehabilitation and expansion of the distribution system is therefore an essential basis for increasing the number of people with access to clean and safe water supply. The expansion of sanitation facilities—both on- and off-grid—will not only increase access but also prevent chronic cholera outbreaks in the city.

71. **Operational efficiency improvements and NRW reductions in Dar es Salaam WSS.** Efforts to improve the capacity of DAWASA and DAWSCO include (a) strengthening and empowering existing area offices and creation of new ones as necessary, and (b) implementing phased NRW reduction measures including reduction of commercial and physical losses. Studies conducted on NRW Assessment and Development of NRW Management Strategy have been a useful guide on adopting measures for NRW reduction and management. The interventions proposed for DAWASCO include rehabilitation and extension of distribution network, operationalization of DMAs by providing bulk and customer meters, equipment and tools, information and communication technology (ICT) support to NRW reduction and customer care, and TA for NRW.

72. **Support to institutional restructuring/reform and capacity building of the Dar es Salaam WSS services.** The Dar es Salaam WSS improvement component benefited from several assessments and detailed studies and experience from the World Bank engagement with the two institutions. A legal and organizational basis for the institutional reform has been established with full ownership of the beneficiary institutions supported by TA. The new institutional reform arrangement will substantially change the mandate, accountability, and responsibility of the two utilities, DAWASA and DAWASCO. A Reform Technical Team (RTT), formed by staff drawn from relevant institutions and led by the Urban Water Supply Division Director MOWI, supported by an international and a national consultant, has been engaged in preparation and implementation of the reform. A reform implementation road map (with detailed inputs) has been established by the MOWI to ensure better accountability and improve the WSS services in the city.

C. Financial Management

73. A FM assessment of the implementing entities—MOWI, DAWASA, and DAWASCO—was carried out in July 2016 and updated in October 2016 in accordance with the World Bank Directive: Financial Management Manual for World Bank Investment Project Financing Operations issued on February 4, 2015, and effective from March 1, 2010, and the World Bank Guidance: Financial Management in World Bank Investment Project Financing Operations, issued and effective from February 24, 2015.

74. The objective of the assessment was to determine whether (a) the implementing entities have adequate FM arrangements to ensure that project funds will be used for the purposes intended, in an efficient and economical way; (b) project financial reports will be prepared accurately, reliably, and on time; and (c) the entity's assets will be safeguarded. The assessment concluded that there are adequate and acceptable FM arrangements in place at the three institutions.

75. Weaknesses in FM include: accounting software of DAWASA and DAWASCO not being able to generate project financial reports directly from the system; vacant managerial positions in the finance and accounts department of DAWASCO; limited staff knowledge in DAWASCO regarding the World Bank's financial management and disbursement guidelines; and weak internal audit. To mitigate these fiduciary risks, a number of capacity-building interventions have been identified and required staff are being hired by the IAs to fill the capacity gap.

76. The overall FM risk rating for the project is Substantial while the mitigated risk is Moderate. This risk will be continuously monitored throughout the implementation phase of the project.

D. Procurement

77. All procurement will be carried out in accordance with the World Bank's Guidelines: Procurement of Goods, Works, and Non Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, dated January 2011, revised in July 2014; Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, dated January 2011, revised in July 2014; Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, dated October 15, 2006 and revised in January 2011; and provisions stipulated in the Financing Agreement.

78. The Public Procurement Act, 2011 as amended through the Public Procurement (Amendment) Act, 2016 will be applied for procurements below the defined thresholds involving National Procurement Procedures. The Public Procurement Act, Act No. 7 of 2011, has been reviewed by the World Bank and found to be consistent with the World Bank Procurement Guidelines, except for the provisions of Clause 54 of the act, which permits application of national preference in bid evaluation under National Competitive Bidding (NCB). There should be no preference accorded to domestic suppliers and contractors under NCB for goods and works. Furthermore, in accordance with paragraph 1.16(e) of the Procurement Guidelines, each bidding document and contract financed out of the proceeds of the credit shall provide that (a) the bidders, suppliers, contractors, and subcontractors shall permit the World Bank, at its request, to inspect their accounts and records relating to the bid submission and performance of the contract, and to have said accounts and records audited by auditors appointed by the World Bank; and (b) the deliberate and material violation by the bidder, supplier, contractor, or subcontractor of such provision may amount to an obstructive practice as defined in paragraph 1.16(a)(v) of the Procurement Guidelines.

79. The MOWI, DAWASA, and DAWASCO will be responsible for procurement activities and also carry out the oversight function in procurement and contract management for activities under their respective components. The Wami-Ruvu Basin Water Authority may (subject to a capacity assessment) be involved in the procurement of contracts for implementation of activities decentralized to the basin. A capacity assessment of the agencies involved in the implementation of the project procurement activities was carried out in April and May 2016. The assessment reviewed the organizational structure for implementing the project, functions, staff skills and experiences, adequacy for implementing the project, and the interaction between the project's staff responsible for procurement activities, and the relevant government agencies. The assessment revealed the following deficiencies: (a) inadequate space for offices and for storage of procurement records; (b) inadequate staff in DAWASA and DAWASCO for managing the procurement activities under the project; (c) some staff lack training in procurement under the World Bank procedures and in contract management; (d) a lack of modern equipment to support procurement operations; and (e) a lack of clear procedures and guidelines spelt out in manuals to provide guidance in the procurement processes.

80. The mitigation measures proposed include (a) provision of more space for staff offices and storage of records; (b) recruitment of procurement staff in DAWASA and DAWASCO; (c) training of procurement staff in procurement under the World Bank procedures and in contract management; (d) provision of modern office equipment; and (e) preparation of a Procurement Manual to provide guidance in the processing of contracts. The overall unmitigated project risk for procurement is Substantial.

81. In addition to the mitigation measures discussed above, further measures will be taken for the strengthening of the PMUs of the ministry and DAWASA, to make them model agencies with regard to

procurement. These measures will facilitate having a system for tracking of procurement processes as well as for ensuring proper keeping of procurement records for the agencies. It is expected that after implementation of the measures, the overall mitigated risk for procurement will be Low.

E. Social (including Safeguards)

82. The project will finance investments in water supply, distribution, sewerage network expansion and treatment, and sanitation in unserved priority areas. Further sustainable watershed management and water security improvements are expected to be supported by the project. The above project activities have land acquisition implications and therefore triggered OP 4.12 - Involuntary Resettlement. However, because their scope and other details for the sewerage and sanitation interventions are yet to be determined and the water supply network expansion does not involve resettlement, a Resettlement Policy Framework is prepared and disclosed both in-country and on the World Bank external website. The Resettlement Policy Framework provides guidance on the preparation of site-specific land acquisition plans or resettlement action plans, whichever is applicable, where required. The plans indicate, among others, consultations with the affected people, compensatory measures for the land acquired, and monitoring and reporting arrangements. Construction-related social impacts will be addressed through the application of the Environmental and Social Management Framework (ESMF).

83. **Capacity assessment for social safeguards.** Experience from WSSP-I has shown some level of social risk management. DAWASA has a social specialist and also the MOWI has one social specialist in its Safeguards Management Unit. However, given that DAWASCO would be taking on a new role of implementing the expansion and rehabilitation of transmission and distribution networks and has little experience with safeguards implementation and monitoring, there is need for additional capacity both in numbers and skills targeted at social safeguards. To that end, DAWASCO will hire one social specialist and one community liaison officer to support the project. Further, DAWASA will hire a social specialist to increase its capacity for implementation of social safeguards. The World Bank will review the terms of reference for the new staff of both entities to ensure that they possess the required education and experience needed to increase capacity. The recommended social staff will work as the social focal points in DAWASA and DAWASCO and will liaise with the safeguards unit of the MOWI. The project will provide training for both existing social staff and the new hires to enhance their social risk management for the WSSP-II.

84. **Citizen engagement and monitoring.** To engage citizens, under WSSP-II, a customer forum will be established by DAWASCO. The forum, which will also act as a monitoring tool, will meet on a quarterly basis and the result of their meeting will be reflected on the quarterly reports submitted to the World Bank. In addition, DAWASCO already has a website and call center for customer feedback. The website can be expanded to have a specific section regarding the activities under WSSP-II and allow customer and user feedback. The call center can also be used to support the grievance mechanism being established for the project. This will build on parallel initiatives by the MOWI and its partners on improving citizen engagement. Periodic consumer satisfaction surveys by DAWASCO will be encouraged to obtain more inclusive feedback on water supply services provided.

F. Environment (including Safeguards)

85. The project will support investments in water supply distribution and sewerage network expansion, including treatment and sanitation facilities for unserved priority areas and sustainable watershed management interventions and water security improvements. Given the nature of proposed activities and investments, the project is rated Environmental Risk Assessment Category B. Appropriate mitigation measures will be undertaken to address potential environmental and social impacts. Environmental safeguard polices triggered for this project are Environmental Assessment (OP/BP 4.01),

Natural Habitats (OP/BP 4.04), Physical Cultural Resources (OP/BP 4.11), and Safety of Dams (OP/BP 4.37).

86. **Safeguards instruments.** The design of the proposed WWT plant and actual location for the site are yet to be determined. Thus, the ESMF for the project has been prepared and disclosed in-country and on the World Bank's external website. The ESMF establishes clear procedures and methodologies for site-specific environmental and social assessment and approval for appropriate safeguard instruments before implementation of subprojects or proposed investments under the project. These instruments range from an Environmental and Social Impact Assessment (ESIA) to a simplified Environmental and Social Management Plan. Based on the ESMF, the IA for the water supply distribution system, DAWASA, has prepared and disclosed an ESIA. The ESMF will also guide preparation of an ESIA for the construction of a modern WWT plant and appropriate instruments for sanitation infrastructure in unserved priority areas, as well as for small category "B" dams and other retaining structures. In addition, the framework establishes the principles and procedures to undertake consultations and to implement grievance mechanisms, as required during project implementation.

87. **Capacity assessment for environmental safeguards.** The client has considerable experience with the World Bank safeguards policies. Two of the three IAs (DAWASA and MOWI) already have experience and capacity with the World Bank safeguards from previous World Bank engagement in the sector. The MOWI has an Environment and Safeguards Management Unit, which includes two environmental specialists, with plans to hire two more environmental specialists. Details on the capacity of each entity for environmental safeguards are discussed under Environmental Safeguards in annex 3. Given that DAWASCO would be taking on a new role implementing the expansion and rehabilitation of transmission and distribution networks and has little previous experience with any safeguards management, there is a need for capacity building to implement safeguards activities under WSSP-II. Therefore, DAWASCO will hire an environmental specialist to support WSSP-II. DAWASA already has four compliance staff in the Compliance Unit, most of them with environmental backgrounds.

88. During implementation of WSDP-I, the project hired an experienced international safeguards adviser to assist in ensuring adherence to the safeguard requirements and provide hands-on safeguards management capacity building and training. This led to significant improvement in safeguards management from training, manual development for IAs (that is, Guidelines of Good Environmental and Social Practices for the Water and Sanitation Sector), and oversight from the MOWI in particular.

89. Despite the improvements in environmental safeguard management achieved under WSSP-I, more training, equipment, and other capacity building are needed for WSSP-II and will be provided under the project. The World Bank team will continue to closely supervise and provide implementation support on principles and application of safeguard policies.

G. World Bank Grievance Redress

90. 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.

Annex 1: Results Framework

Country: Tanzania

Project Name: Second Water Sector Support Project (P150361)

Results Framework

Project Development Objectives

PDO Statement	
The Project Development Objective is to (a) strengthen the capacity for integrated water resources planning and management in United Republic of Tanzania, and (b) improve access to water supply and sanitation services in an operationally efficient manner in Dar es Salaam.	
These results are at	Project Level

Project Development Objective Indicators

				Cumulative Target Values							
Indicator Name	**Core**	**Unit of Measure**	**Baseline**	**YR1**	**YR2**	**YR3**	**YR4**	**End Target**	**Frequency**	**Data Source/Methodology**	**Responsibility for Data Collection**
Key investment decisions (project approvals) incorporating water resources management considerations		Number	0	0	0	2	4	6	Annual	Sector reports, CE reports (specifically agriculture, natural resources, energy, urban, and disaster management)	NWB/MOWI/ BWB
Basins with water resources data available to the general public in real time		Number	0	0	1	5	5	9	Semi annual	Basins with at least five hydrometric stations report	BWBs/MOWI

Basin Water Boards fully operational and implementing an approved plan for the integrated basin water management		Number	0	One basin has approved IWRMD plans. One basin scores above 50%	Six basins have approved IWRMD plans. Six basins score above 50%	Nine basins have approved IWRMD plans. Six basins score above 60%	Nine basins have approved IWRMD plans. Seven basins score above 70%	Nine basins have approved IWRMD plans. Seven basins score above 75%	Semi annual	PAF[8] reports score	BWOs/MOWI
People provided with access to improved sanitation facilities under the project	☒	Number	0	20,000	100,000	500,000	770,000	1,000,000	Annual	Progress report	DAWASCO/DAWASA/LGA report consolidated by the MOWI
People provided with access to improved water sources under the project	☒	Number	0	25,000	100,000	300,000	500,000	770,000	Annual	Progress report	DAWASCO / DAWASA report consolidated by the MOWI
Reduction of Non - Revenue Water		Million tones per year	50.74	54.75	50.74	42.60	33.50	30.30	Annual	Progress report	DAWASCO report and PBC monitoring report
Direct project beneficiaries of which female , of which poor		Number Percentage Percentage	0	25,000 50% 30%	380,000 50% 30%	735,000 50% 30%	1,285,000 50% 30%	1,870,000 50% 30%	Annual	Progress report	DAWASCO / DAWASA report consolidated by the MOWI
Intermediate Results Indicators											

[8] Scores on the multicriteria PAF that the ministry is using for structured monitoring of BWB performance. This framework is in use since WSDP-I and was recently updated and improved. The diagnostic tool and process provides benchmarks and improvement priorities on the core functions, governance, and administration of the BWBs.

☒ Demarcates Corporate Sector Core Indicators

Indicator Name	Core	Unit of Measure	Baseline	Cumulative Target Values					Frequency	Data Source/Methodology	Responsibility for Data Collection
				YR1	YR2	YR3	YR4	End Target			
Component 1: Integrated Water Resources Management (IWRM)											
1. Center of Excellence supporting National Water Board established and operational		Y/N	N	N (designed)	Y (established)	Y (operational)	Y - strategic state of water resources report developed	Y -two cross-sectoral assessments	Annual	Progress report	MOWI - Water Resources Department
2. Basin Water Boards with revenues meeting their operational expenses by at least 30% and collection increase by 2.5% annually		Number	2	4	5	6	8	9	Annual	Progress report	MOWI - Water Resources Department
3. A functional national geo-database and national Decision Support System (DSS) on water resources		Y/N	N	Y (central data repository)	Y (data rescue completed)	Y (DSS)	Y (DSS)	Y (incorporating real-time data)	Annual	Progress report	MOWI - Water Resources Department
4. Number of hydromet stations installed and data collection functional		Number	0	0	20	30	40	50	Semi annual	Progress report	Basin offices report; MOWI - Water Resources Department consolidates

5. Water User Associations established, strengthened and functional to support watershed management according to established action plan		Number	96	100	120	150	180	200	Semi annual	Progress report	Basin offices report; MOWI - Water Resources Department consolidates
6. Area with watershed management action plans developed and operational		ha	0		750,000	1,450,000	1,950,000	2,250,000	Annual	Progress report	Basin offices report; MOWI - Water Resources Department consolidates
7. Land area where sustainable land and water management practices have been adopted as a result of the project		ha	0	0	0	10,000	15,000	20,000	Annual	Progress report	BWB
Component 2: Dar es Salaam Water Supply Improvement											
1. Number of water utilities that the project is supporting		Number	2	2	2	2	2	2	Annual	Progress report	MOWI
2. New piped household water connections that are		Number	0	5,000	20,000	45,000	70,000	100,000	Annual	Progress report	DAWASCO

resulting from the project intervention											
3. Piped household water connections that are benefiting from rehabilitation works undertaken by the project		Number	0	5,000	30,000	60,000	115,000	175,000	Semi annual	Progress report	DAWASCO report consolidated by the MOWI
4. Performance Based Contract to improve the continuity of water service in selected District Metered Areas of Dar es Salaam in place		(Yes/No)	No	Yes	Yes	Yes	Yes	Yes	Annual	Progress report	DAWASCO
5. Collection efficiency		Percentage (cumulative)	80	80	85	90	95	95	Annual	Progress report	DAWASCO report consolidated by the EWURA
Component 3: Dar es Salaam Sanitation Improvement											
1. New household sewer connections constructed under the project		Number	0	0	0	4,200	12,500	22,000	Annual	Progress report	DAWASCO consolidated by the MOWI

2. Mass of BOD pollution load removed by treatment plant under the project		Tons / Year	0	0	0	136	403	709	Annual	Lab Report	DAWASCO / DAWASA
3. New fecal sludge treatment plants constructed under the project		Number	0	1	5	15	35	50	Semi annual	Progress report	DAWASCO
4. Number of additional public and communal latrines rehabilitated /constructed under the project		Number	0	5	15	25	30	30	Annual	Progress report	DAWASCO
Component 4: Project Management and Implementation											
Grievances redressed in a satisfactory manner within the stipulated time frame		%	0	60	75	80	90	95	Semi annual	Progress report	DAWASCO

Annex 2: Detailed Project Description

TANZANIA: Second Water Sector Support Project

Project Context

WRM

1. **Tanzania's economy and society is dependent on water resources for food security, agriculture, energy, industrial development, tourism, water supply, and natural habitats of global importance.** It is well known that these water resources are variable in time and space, and that some parts of the country face acute problems as water resources are insufficient for competing demands, and climate variability and increased climate risk have placed many rural communities in a state of vulnerability and food insecurity. Current trends may exacerbate the situation and have widespread impact on poverty and the economy as a whole.

2. **Tanzania's WSDP placed high importance on WRM in its first phase and will continue this emphasis in the second phase.** Some successes were registered during the first phase in establishing and/or building capacity for effective IWRM in key institutions, including the NWB, BWBs, several CCs, SCCs, and WUAs in critical water resource areas. Combined, the key tenets of the policy and act provide a good platform to tackle the issues at hand. Work has therefore started on basin planning, improving processes to grant water permits, issuing effluent discharge permits, and demarcating and gazetting water resources areas. Water laboratories are better equipped and some have been accredited or are in the process of doing so. Hydromet improvements have been piloted and water resources investments prepared (see Box 2.1 on the key outputs of WSDP-I).

3. **These outcomes have yet to translate into effective cross-sectoral collaboration, improved service delivery, and sustainable results on the ground.** Over the past years, tensions have continued growing as a result of rising water resources challenges, and while institutions are in place, their performance and effectiveness need further strengthening. The NWB, established to effect intersectoral coordination lacks effective powers and does not have access to a knowledge base that can support decision making. BWBs have unreliable resources, are generally understaffed, and many are just about able to perform core functions, but there is some promise in the few that have the capacity to effectively engage stakeholders in planning and management, that maintain their knowledge base, and efficiently manage the basin through licensing and awareness raising. The linkage with local government administration is weak. CCs, SCCs, and WUAs are only just starting to address the issues in their respective areas. Through WSDP-I, water resource models were piloted in a few basins and the basic working environment of office, transportation, and capacity enhancement was established. A PAF is in place, which provides good insights in the institutional challenges, on internal and external coordination.

4. **Despite these efforts, data collection, analysis, storage, advice, dissemination is a continued challenge.** The timely and easy accessibility of critical water resources data to a wide range of clients and the general public has been hampered by a poorly maintained network, inadequate planning and financing for collection, and little attention to analysis, storage, and dissemination of data and derived knowledge products. This has influenced and is continuing to influence the quality of basin planning, designs in water-related sectors, and awareness of the challenges at hand. The lack of necessary tools to inform policy decisions in economic sectors has hampered progress in enabling prioritization and decision making across sectors. Enforcement of water quality standards has also been limited.

5. **As a means of improving water security, protection of water sources and planning in the upper catchments are increasingly important in a number of basins.** Inadequate water storage capacity, degradation of the catchments, and over abstraction in upstream areas significantly affect climate resilience in terms of food production, nature conservation, energy production, drinking water, and this has implications for the general economy. Climate risks will further exacerbate this picture if the water resources challenges are not addressed comprehensively. So far, the IWRMD plans prepared at basin level provide a good basis for prioritizing and planning actual investments and it will be critical that these investments are pursued within that context. Based on these plans, it is clear that substantial financial resources will be required, as well as new approaches, to fast track planned infrastructure development.

WSS

6. **The GoT has invested considerable finances in the development of the water sector, gradually consolidating approaches and broadening impact across the country.** The World Bank has supported this process through a series of investments, including the Rural Water Supply and Sanitation Project (P047762-TZ) implemented between 2002 and 2008. The project piloted community-based rural WSS service provision; established the institutional framework for decentralized planning and implementation of rural water WSS projects; and scaled up community-based rural water supply and sanitation for 500,000 people in 12 pilot districts. In parallel, the World Bank supported the Dar es Salaam WSS Project (P059073) between 2003 and 2010, which aimed to strengthen institutional capacity building and reform the utility; introduce pro-poor community WSS delivery mechanisms; and rehabilitate and extend critical water supply and wastewater facilities.

7. **These interventions contributed to the development of the GoT's WSDP in 2006.** The WSDP introduced a multidonor-supported SWAp that encompassed the entire water and sanitation agenda, and was designed to be implemented in several five-year phases, covering a period of 20 years (2006–2025). The WSDP-I, implemented from 2006 to 2015, focused on rolling out legal and institutional reforms, setting the basis for IWRM. It also strengthened the basis for improved access to WSS across rural and urban local governments, including regional centers, urban and municipal towns, and the Dar es Salaam metropolitan area. Through these efforts, the Government has made steady progress in increasing access to services across the country. In urban areas, by September 2015, the MOWI reported that 7.9 million people had access to safe water through 584,473 household connections and 5,836 kiosks and public taps; and 527,000 people were connected to the sewerage system. In Dar es Salaam in particular, 2.8 million people had access to safe water supply through 152,000 domestic connections and 203 kiosks/public standpipes; and about 326,130 people were connected to the sewer network.[9] Box 2.1 provides an overview of the WSDP.

[9] The World Bank contributed to this first phase of WSDP through its First Water Sector Support Project - WSSP-I (P087154).

Box 2.1. Overview of WSDP Phase I

Under WSDP phase I, investments in institutional support were aimed at operationalization and strengthening the new water resources framework as provided for in the water sector strategy and the Water Resources Management Act (Act No. 11 of 2009), especially at basin and sub-basin level. The act devolved WRM to basin-level entities. Currently, all nine BWBs are operational and most have been conducting regular meetings. The facilities for and administrative capacities of the BWBs were improved during WSDP-I. Buildings were upgraded in four basins, and BWBs were provided with operational equipment and transportation. Fiduciary capacity was strengthened and workflow established for critical work areas, such as annual work planning, water charge collection, and permitting. There have been improvements in all these areas as well as in cost recovery. However, technical capacity remains weak because of staff attrition, low capacity of staff, and limited backstopping and exchange, especially in more remote basins. A PAF was adopted by the BWBs and the ministry to assist in monitoring performance. This was updated recently and is in use as a tool for self-assessment by the BWBs and can support targeted capacity enhancement programs.

In terms of basin planning, the first phase led to the completion of IWRMD plans for six out of the nine basins (Lake Tanganyika, Lake Nyasa, Ruvuma/Southern Coast, Lake Rukwa, Rufiji, Internal Drainage). While the three remaining assessments have been done, the strategic planning element have not been completed for various reasons (Wami-Ruvu, Pangani, and Lake Victoria). In the nine basins with IWRMD plans, the plans still need to be formally adopted and the Government requires a strategic environmental assessment to be carried out as a basis for their adoption. The development of these plans has been a learning process as it is the first time that comprehensive water resources planning has taken place at the basin level. This first generation of IWRMD plans has significant data and information gaps and comparative analysis across basins is complicated as each plan is built on different premises, data sets, modeling tools, and so on. It will be very important under phase II to (a) complete the remaining basin plans; (b) adopt the plans to provide guidance for the coming years; (c) pull together critical data and harmonize the systems and analysis for consistent countrywide analysis and support; and (d) implement priority short-term activities in each of the basins.

A total of 90 WUAs were established under WSDP-I. Despite initial delays, procedures and capacity in the BWBs were gradually built up, although the process has been cost-intensive. WUA strengthening will require further attention, especially for their core function of localized water management. To date, only a small number of CCs and SCCs have been established. Because these are umbrella organizations for WUAs, the delays in setting up WUAs had knock-on effects on the CCs. In view of this experience, there is the realization that setting up CCs/SCCs must be targeted, more efficient, and more purpose-driven.

The project also supported the establishment of the NWB at the national level. NWB is an advisory board to the Minister of Water on matters related to multisectoral coordination in integrated water resources planning and management, as well as resolution of water conflicts. It consists of ex officio members from the different sectors, as well as representatives from local government administration, BWBs (3), the private sector, and NGOs. While the NWB was established and met several times, it has done so in the absence of adequate high-level multisectoral information and analysis to underpin its advice. As this board is advisory in nature, it will derive its effectiveness not from a legal status, but from the quality of the advice and its ability to convene and debate across the sectors. Credible data and information is thus a key priority for the effectiveness of NWB. This has been identified as a key issue for the second phase.

Other activities supported during WSDP-I included development of technical designs, ESIAs, and resettlement action plans for a number of storage dams, pilots on hydromet modernization, dam safety activities, groundwater development, support to the defluoridization campaign, modernization of labs, granting of licenses, discharge and water quality measurements, participation in regional workshops, and communication material support. Overall, over the lifetime of WSDP-I, important reforms were undertaken and new institutions, procedures, and technologies were employed to improve the quality of IWRM. Institutional and legal reforms further promoted the principles of IWRMD as set out in the policy and the act. Capacity enhancement and technical assistance activities were undertaken to alleviate the capacity gap that emerged after retirement of a large number of experts. However, due in part to limited capacity in the ministry, inadequate project implementation arrangements, and delays in funds flow, the project did not fully achieve its ambitious targets and most of them were delayed. Water resources monitoring was barely maintained and did not improve over the project period with a significant fraction of stations falling or remaining in a state of disrepair.

Vital lessons were learned through this experience, leading to an overall understanding that some activities and the implementation arrangements need to be reshaped, overall programming needs to be more targeted and strategic, and in general the focus needs to shift to increasing performance and delivering results on the ground that are relevant to water-dependent sectors.

8. **Despite commendable achievements to date, the sector continues to face considerable challenges particularly in rapidly urbanizing areas such as Dar es Salaam.** Because of inadequate coordination among sector institutions, weak data management and reporting mechanisms, and poor operational inefficiency—as evidenced by the high rate of NRW—levels of access to urban water supply and sanitation service are declining. In Dar es Salaam, NRW rates are as high as 53 percent, and water service coverage is about 55 percent.[10] However, water production capacity which had been constrained as a result of the slow pace of infrastructure development, is now set to increase.

9. **On completion of ongoing water supply projects under WSDP, daily water production is expected to more than double from the current 300,000 m^3 to 756,000 m^3.** While this will allow for significant improvements in water services in Dar es Salaam, it will depend on measures taken to reduce the level of NRW. As greater pressure is added to the aging distribution system, more bursts could occur leading to an increase in NRW. In addition, increased levels of water supply must be matched by improvements in sanitation, to avoid potential environmental and health risks. As existing sewer systems currently serve only 10 percent of the city's population, more than 50 percent of fecal waste is disposed without treatment, illegally (emptied into storm water drains) or through the largely informal service providers. In some instances, this has led to contamination of groundwater supplies and recurrent incidences of diseases such as cholera.

10. **Addressing these challenges will require a more integrated and robust institutional framework for delivery of WSS services in Dar es Salaam.** Currently, responsibility for service delivery is divided between DAWASA—the asset holder, and DAWASCO—the service provider, under a lease agreement signed between DAWASA and DAWASCO. Since 2014, the GoT has embarked on an institutional reform initiative to improve the provision of WSS services in the city. The newly proposed institutional arrangement involves changing the mandate, accountability, and relationship between the two institutions, whereby DAWASA will become the bulk service provider and DAWASCO will be responsible for downstream WSS service provision. The lease agreement will be replaced by a performance-based bulk supply agreement. The process of operationalizing this new model is underway, and in the interim, the lease agreement between DAWASA and DAWASCO has been extended and amended to reflect the proposed bulk and retail relationship and to establish the basis for the newly assigned roles and responsibilities of the two institutions. The EWURA, which has the regulatory responsibility for monitoring utilities performance and regular tariff reviews, will play a key role in enforcing these mandates. In addition, it will also be instrumental in ensuring that sanitation services—for which responsibility (in urban centers) is shared between multiple stakeholders: the three municipalities, DAWASA and DAWASCO, the private sector, communities, and households—are clearly assigned and adequately supported.

11. **The World Bank will support the second phase of WSDP as part of its long-term engagement with the water sector.** As outlined in Table 2.1, this project builds on activities implemented under WSDP-I and will be followed by further interventions in WSDP-II (2023–2033). Further details on the objectives of WSDP-II follow below.

Table 2.1: World Bank - Overview of Past, Current and Future Engagement with WSDP

The objective was to support the GoT effort to (a) improve IWRM	This project will (a) strengthen the capacity for integrated	Support to (a) targeted investments and water management decisions that improve water

[10] EWURA estimate for 2015/2016. According to WHO-UNICEF MDG report 2015, at the end of MDG, 77 percent of the urban population in Tanzania has access to an improved water source and only 31 percent of the population to improved sanitation services.

by strengthening water sector institutions; and (b) expand access to water supply and sanitation services.	water resources planning and management in United Republic of Tanzania, and (b) improve access to water supply and sanitation services in an operationally efficient manner in Dar es Salaam.	security, livelihoods and environmental sustainability in the country's basins and (b) improved access to sustainable water supply and sanitation to urban and rural people toward meeting the SDGs.
Result: - Establishment of institutions and development of enabling environment to lay the foundation for operationalization of the sector institutions for long-term improvement of the sector. The coverage included all aspects of the water sector: IWRM; Rural and Urban Water Supply services infrastructure under a SWAp arrangement.	Focus areas: - Coordination between sector institutions competing for water resources; strengthening institutions to deliver on mandates sustainably; - Modern data and information base to inform decision on trade-offs and complementarity for water use - Water conservation in Wami-Ruvu basin where Dar es Salaam water sources are located - Expand access to WSS in Dar es Salaam and improve water utilities operational efficiency to ensure sustainability of the service	Focus areas: - Institutions capable of delivering within strong legal framework, sustainably financed. - Improved public-private partnerships in service delivery. - Enforce IWRM planning and allocation in national and regional sector planning and investments. - Continued knowledge base and hydromet improvements and improved integration in regional networks. - Consolidation of catchment investments in earlier phases. - Water security and conservation investments brought to scale to extend WSS investment to improve sustainable access to safe water supply and sanitation services toward meeting the SDG.

12. **Overview of WSDP-II.** As part of the World Bank's long-term engagement with the GoT, this project will support WSDP-II (2014/2015–2018/2019). Support will be aligned to both the WRM and WSS subsectors and WRM activities planned under the project will support the overall objective of ensuring availability of sufficient water for socioeconomic development and environmental sustainability. WSDP-II has two subcomponents: one on WRM, and the other on water quality management, as well as a number of intervention areas along the same lines as WSDP-I. Key strategies outlined in the WSDP-II document include:

(a) Strengthening institutional capacity for improving the management of water resources in all the nine BWBs (and other institutions)

(b) Coordinating the development and implementation of the IWRMD plans

(c) Implementation of priority water resources investments

(d) Strengthening capacities at a national level to provide support to BWBs and coordinated implementation of WSDP

13. WSDP-II sets out KPIs for the overall program and a large number of activities to be achieved with an overall budget of US$789 million over five years.

(a) Approved and effectively monitored water permits increased from 3,680 in December 2013 to 6,000 by 2019

(b) About 100 percent of eligible enterprises have attained wastewater discharge permits by 2019

(c) Comprehensive mapping of water sources and recharging areas to ascertain conservation and protection baselines and specific targets, done by 2017

(d) Annual Water Quality Yearbook is published by 2017

(e) Five water laboratories accredited by 2019.

14. The majority of the WSDP-II budget is allocated to the development of major water storage infrastructure already under design/preparation or proposed for implementation in the IWRMD plans. The ministry has prioritized activities within the overall program to match available financing and discussed funding priorities with the major donors and financiers to enable an appropriate division of labor and packaging of investments.

Component 1: Integrated Water Resources Management (IWRM) (US$50.0 million equivalent)

15. The proposed design for WSSP-II Component 1 is therefore based on the achievements and lessons from phase I, the prioritized strategic planning for phase II and a dialogue on synergies and harmonization of approaches between the key development partners and the ministry. Selectivity and results orientation have been key factors in the dialogue. The focus on continued support to institutional reform, improving knowledge and water security, and coordination across sectors addresses the most imminent challenges in the water sector and links it well with Components 2 and 3. The upstream investments and overall improvements in WRM create a sustainable framework for the investments in Dar es Salaam, as well as support critical investments in agriculture, energy, and environment. The three subcomponents under this component are listed in table 2.2.

Table 2.2. Summary of WSSP-II - IWRM Subcomponent Cost

Subcomponent	Budget (US$, millions)
1.1: Strengthening WRM Institutions	13.3
1.2: Improved WRM Information - Hydromet services	15.5
1.3: Water Security and Conservation	21.2
Total	**50.0**

16. The project will address the interlinked challenges of poverty and a deteriorating natural resource base to mitigate the process of environmental degradation and improve the productive potential of water resources. Building on results achieved under WSSP-I, the project will promote integrated climate resilient investment planning in the basin, including institutional capacity building to monitor and utilize resource information and to coordinate and collaborate across critical sectors at national, basin, and local levels. Project activities will support planning and implementation of infrastructure investments as well as water allocation decisions based on sound analytics and improved monitoring of the resource base; adoption of sustainable land, forest, and water management practices to reduce land degradation, to build resilience to climate risk and improve the productivity of households deriving their livelihoods from priority catchments. Project investments would be designed to support the GoT's economic growth and development plans as set out in the IWRMD plans.

Subcomponent 1.1: Strengthening WRM Institutions (US$13.3 million equivalent)

17. This subcomponent aims at strengthening the institutions responsible for the IWRMD (BWBs, NWB, WUAs, and MOWI) and partners to more adequately deliver on their mandates (support financial sustainability, capacity enhancement, performance management, and importantly cross-sectoral

collaboration). The focus will shift from single-sector to intersectoral collaboration and joint investments, in line with recommendations from a high-level dialogue with the GoT. The support under this subcomponent is targeted at performance improvements, as monitored through the PAF for BWBs and actual decision making at the NWB.

18. To address a perceived weakness in the institutional setup of the NWB, namely its confined advisory role and lack of an executive agency, a key activity is the establishment of a Water Resources Center of Excellence to provide multisectoral analysis and strategic policy support to the NWB, which comprises different stakeholders. As an advisory body by mandate, the sector relevance of the NWB depends on the accuracy, relevance, and inclusiveness of its advice to the Minister of Water and the other sectors represented on the board. The current situation of potential mismatch in planning between different economic sectors and the lack of a common information basis and platform to discuss such trade-offs and synergies is costly and ineffective. The aim is that the Water Resource Center of Excellence will provide an analytical background and multisectoral backing for policy advice by bringing together professionals from the different sectors and jointly address complex multisector water problems and as such supports the NWB in fulfilling its important role of advising on water resources. It will be a lean organization, have direct functional relationships with the different sector agencies and other stakeholders and academia, comprise multi-sectoral staff, and be answerable for its coordination mandate to the NWB. As such, it will complement the Administrative Secretariat function of the Water Resources Division, by becoming the technical secretariat and multisectoral 'think-tank' for the NWB. It will also support the ministry in providing technical guidance and analytical support to BWBs on multisectoral decision making at the basin level. The Water Resource Center of Excellence will provide on-demand advice on key water resources areas; on water in the economy, critical policy choices, trade-offs, practical collaboration opportunities, and support the capacity of BWBs to apply these concepts in their respective basins. The center will also implement activities to broaden and deepen the knowledge base and carry out research of general interest in the water resources area. The center will comprise both technical staff drawing from the different sector ministries, as well as competitively recruited individuals in fields of hydrology, GIS, database management, and so on. Hierarchically, it will be placed in the Ministry of Water with reporting lines to the NWB to which it will serve as the technical secretariat and the various ministries for which it will develop relevant knowledge products and train professionals. Support to the center will be in the form of TA for its planning and carrying out of core functions, financial support for the initial setup, research projects, materials, and so on with the view that this center remains a lean and sustainably financed institution.

19. At the basin and local levels, the project will support coordination between Basin and Lake Water Boards with the LGAs on issues of land and water management planning and regulation. The component will also continue supporting improvements to essential facilities, equipment and information systems to enable agencies to more effectively carry out their roles in the program. This subcomponent is critical to enabling the shift from the current fragmented approach to investments and systems operation, to a more coordinated and holistic approach based on a shared and sustainable vision for the development and management of the resources and the capacities at different tiers in the Government and across agencies to follow through on this vision. While WSSP-I emphasized performance of internal functions of these institutions, WSSP-II will explicitly emphasize external coordination and collaboration in delivering on the mandate of WRM. Agency performance will be measured through a PAF, adopted and improved from the first phase and institutional strengthening will be monitored according to this framework and remedial actions will be taken accordingly. The ultimate objective is that water management institutions are able to articulate the vision for the basin in

consultation with stakeholders and act accordingly to plan and regulate, to support basin and national priorities.

20. At the local level, the project will continue the support provided under WSSP-I to the strengthening of BWBs. A results-based approach will be guiding the TA, focusing on core functions in the areas of (a) coordination on water resources planning; (b) improving the licensing system based on actual water assessments; (c) systematic data collection and dissemination (see Subcomponent 1.2); (d) structured stakeholder consultation and coordination; (e) advancing priority investments; (f) working toward financial sustainability; (g) awareness raising and communication; and (h) improved service standards and monitoring of performance. Particular emphasis will be placed on coordination between Basin and Lake Water Boards with the LGAs on issues of land and water management planning, enforcement, and investments (see Subcomponent 1.3). The project will also continue to support improvements in essential facilities to enable agencies to more effectively carry out their roles in the program.

21. Specific activities to be financed under this subcomponent are (a) the support to the institutional and physical setup and functioning of a Water Resources Center of Excellence to support the NWB with multisectoral analysis and strategic policy support; the project will also explore subsidiary legislative reform to strengthen the legal mandate of the NWB; (b) TA and support to targeted multisector research on critical WRM issues in Wami-Ruvu and beyond; (c) development of the Wami-Ruvu IWRMD plan; (d) a sustainable financing study for the sector; (e) information and data consolidation on water resources nationally and at basin level, both from basin planning as well as a water quality information system, and accreditation for laboratories; (f) communication strategy rollout on WRM at basin and national levels; (g) establishment of WUAs and Catchment Management Councils nationwide; (h) equipment and office buildings for WRM institutions, including the Wami-Ruvu BWB in Morogoro; and (i) facilitate basin-level and national-level coordination mechanisms, including an annual forum on the state of water resources in Tanzania. These activities will address priorities with regard to individual staff capacity, internal organization, financing, networking, and collaboration.

Subcomponent 1.2: Improved WRM Information - Hydromet Services (US$15.5 million equivalent)

22. This subcomponent will support the improvement of the knowledge base on water resources in Tanzania. This will enable the MOWI and TMA to collect, store, analyze, and disseminate to the general public more credible data and information to make better use of hydromet and other data for critical water management and sector decisions, such as flood early warning, agricultural development, hydropower management, NRM, improving licensing and infrastructure operations, and information/awareness raising to other sectors on water issues. When successful, this will enable critical improvements in operational decision making and water use efficiency in the hydropower, irrigation, and flood management sectors primarily, as well as improve environmental status and general infrastructure planning along river courses. It is proposed that the hydromet system is revitalized starting from the articulated sector demands to ensure it is purpose- and needs-driven and efficiently organized around these core functions.

23. It is recognized that resource planning, licensing operations, and system operation are severely impeded by the lack of hydrological information. This subcomponent will tackle this fundamental problem and improve the knowledge base on water resources in Tanzania. It will support the different stages of data management with the aim to collect, store, analyze and disseminate to the general public more credible data and information to make better use of hydromet and other data for critical water

management and sector decisions, such as flood early warning, improving licensing and infrastructure operations, and information/awareness raising to other sectors on water issues.

24. This requires an approach that is more encompassing than rehabilitation and expansion of the existing gauging networks. It requires reform to set up dedicated mechanisms and strategic use of financial resources to support most efficient and effective collection, storage, and analysis, and wide dissemination of credible data and knowledge products for a range of WRM needs. This subcomponent includes the activities described in the following paragraphs.

25. **Modernization of the Water Resources Monitoring Network.** Building on pilot investments under phase I, this will include support to modernize the monitoring of weather, water levels, flows, water quality, groundwater, and sediment loads. It is expected that this will result in an optimized core network that provides information in real time or quasi real time. It is expected that this will provide the backbone for a modern water resources information system, improved forecasting and early warning, and an ODSS.

26. **Building a consistent and comprehensive knowledge base.** A lot of time, effort, and resources have gone into the development of the IWRMD plans and associated databases, models, and overall knowledge base. The data are basin specific and fragmented though, and generated using different tools. The key for this activity is assembling a general knowledge base with clear setup for information management, use of harmonized analytical tools that support strategic environmental assessment of the same method for adoption of the plans as well as future consistency in scenario analysis and applied research (see Subcomponent 1.1). This task will rely heavily on previous and ongoing studies on IWRM. For operational use, this knowledge base should link in with local licensing and inform on water use efficiency and water availability.

27. **Development of an ODSS.** This activity will include support for an integrated hydromet data management and visualization platform; weather, hydrologic, and flood forecasting and warning systems; and integrated water system infrastructure operations, including specific pilot modules in priority basins, for priority infrastructure operations. Subsequently, an integrated ODSS will be developed to support water infrastructure management based on a multisectoral perspective (for example, for operation of hydropower reservoirs, major irrigation clusters). This ODSS will be built for target basins at first, to be rolled out to other basins based on demand.

28. **Data rescue and digitalization.** Decades of meteorological and hydrological data are stored in hard copies under precarious conditions. This activity is intended to preserve all data at risk of being lost by digitizing and categorizing it, and make records available for trend analysis by the ministry, the basins, academia, and the general public.

29. **Institutional reform and capacity enhancement.** Currently, hydromet monitoring and development of information products is not a dedicated task in Department of Water Resources. It is underfinanced, with unclear responsibilities, poorly planned and inefficiently implemented, and therefore the output is erratic and ad hoc. There is limited experience in the department and there are few and lengthy procedures. This activity will focus on the setting up of standard protocols, operating procedures, quality control, and a dedicated unit whose primary task is the whole process of data management until delivery to end users. Specifically, this component will complement TA provided by GIZ and support modernization and modern technology use for streamlining of reporting and quality enhancement, as well as support the formation of the hydromet unit within Department of Water

Resources. It is anticipated that the abovementioned approach will result in a highly valued service with important returns in the different sectors it supports. The financing options study should look into options of implementing and sustaining service levels efficiently and also on how to have a dedicated financing stream to BWBs and the Department of Water Resources to maintain these services permanently, while maintaining free and open data sharing and basic services to the sectors and the general public.

30. Specifically, this subcomponent finances consultancies, works, equipment, and training for the following activities: (a) modernization of the Water Resources Monitoring Network and instrumentation for (near) real-time monitoring of weather, water levels, flows, water quality, groundwater, and sediment loads; (b) development of an ODSS, including data management, visualization, forecasting, and early warning as well as system operations; (c) data rescue and digitalization; (d) institutional reform around critical hydromet functions and collaboration between the MOWI and TMA; and (e) dam safety instrumentation based on a dam safety action plan developed under WSDP-I.

31. Lessons learned from WSSP-I and similar programs in the region have been incorporated in the design, most notably: start with the end user: public recognition of the value of these services helps build accountability, a strong client base, and sustainable resource streams; modernization of operations must be of sufficient financing and scope to be transformative. In this light, open data will be promoted; technical modernization must be accompanied with institutional reorganization and clear legal and regulatory frameworks; integration of the national hydromet system between TMA and Department of Water Resources with regional and global knowledge products enhances services with improved data and forecasting products. Importantly also, these investments will be designed within the financial and institutional carrying capacity of the water resources institutions. Costs of operating and maintaining the network will be a key factor in design. The proposed financing options study will need to study hydromet financing in particular.

Subcomponent 1.3: Water Security and Conservation (US$21.2 million equivalent)

32. This subcomponent will support both a broad-based national conservation program by WUAs and BWBs as well as targeted priority investments in the Wami-Ruvu basin. This will support a work program for WUAs and BWBs along the core functions, based on benchmarked annual work plans. Direct investments in the Wami-Ruvu basin will be based on the IWRMD plan for Wami-Ruvu, which is to be developed and endorsed by sectors and complemented by a strategic environmental assessment.

33. **The broad-based conservation program** will be implemented as a capacity enhancement program for lower-tier WRM institutions. WUAs and (sub) Catchment Committees in the country will be supported in carrying out their core functions in conservation, local water planning and management, monitoring, and conflict resolution, through a program of annual funding allocations to WUAs based on a program of increasing responsibility and fund management based on proven performance. The WUAs will be assisted in prioritizing activities, planning and supervising investments, carrying out a program of awareness raising, and local monitoring of the state of water resources in the basin. This support program has a dual role of rolling out broad-based local WRM solutions and strengthening the delivery model through local WUAs. No major investments are foreseen under this component and it supports core functions only. This program will be supported by TA and the BWBs and central ministry trainers. Features from the detailed investment programs in the Wami-Ruvu basin (see below) will be incorporated and lessons learned from implementation will be fed into this annual work program. General catchment management plans have been identified in both basins under the IWRMD planning

exercise and BWBs and WUAs will be assisted in refining these with simple analytical tools and guidelines.

34. This subcomponent will be based on a learning-by-doing approach for the lower-tier institutions. Delivery of results is brought about through a program of field-level capacity building of local institutions. A very active work program will be drawn up for these agencies that takes them from their initial establishment to becoming key players at their level. This requires oversight from BWBs and in the initial stages additional technical support on process and technical auditing. Because BWBs are also in a process of hands-on capacity improvement, the project will finance additional TA at each BWB to support both BWBs and WUAs to assume their roles in carrying out this large work program. All activities will be based on annual work plans and will undergo the process of technical vetting at the BWB and LGA with TA from relevant departments, provided through the project. Annual performance contracts will be drawn up between WUAs and BWBs that spell out mutual responsibilities and funding for activities. Subsequent annual plans and allocations will be based on levels of achievements in previous years. A monitoring system will be in place and results will be communicated, with successful WUAs receiving recognition and further delegated responsibilities.

35. **Focused interventions in the Wami-Ruvu basin.** In addition to this nationwide program to strengthen the core functions of water management agencies, the component will support direct investments focused on the Wami-Ruvu basin. This is a critical basin as the city of Dar es Salaam is located here. Investments in the basin will be carried out in all its sub-basins (Wami, Ruvu, and Coast) and will have high impact on Dar es Salaam and the surrounding region, the proposed future Kidunda reservoir (not financed under this program), as well as in situ in the upstream catchments. These investments will be based on priorities to be identified in the proposed IWRMD plan for Wami-Ruvu, which is to be completed during the first year of the project, building on experiences in developing such plans under the first phase for other basins under WSSP-I. It is expected that the Wami-Ruvu basin plan will be endorsed by all sector agencies and that priority investments and management actions will be identified, which then will be supported under the program. The Wami-Ruvu basin was selected as a priority basin because of its relevance to Dar es Salaam and because it will build on lessons learned from WSDP-I (WSSP-I) interventions in the past, parallel activities in other basins (most notably Lake Victoria, Rufiji, and Pangani), and lessons from within the Wami-Ruvu itself under the Global Environment Facility Sustainable Land Management (SLM) project. A flexible approach is proposed, in which, later on in the project or through future phases, investments could be expanded to other basins as well, in line with the IWRMD plans and upon agreement between the World Bank and Borrower. In any case, it is proposed that a specific investment plan be drawn up for additional basin investments before the midterm review for decision making regarding options for possible future financing. While planning is completed for specific investments (locations, designs, and relative priorities), the following activities will be undertaken.

36. **Planning and monitoring of catchment areas.** An iterative catchment-level planning process will be undertaken by BWBs with involvement of stakeholders. In parallel—the BWBs, with support from the ministry and TA to be recruited for this purpose—will roll out a multiyear on-the-job performance-based training program for WUAs. The WUAs will be assisted by BWBs and TA during the first round of activities in microcatchment action planning at the community level. Planning standards will be tested and harmonized across parallel programs (within WSDP, but also LVEMP II and the proposed REGROW) in early stages of implementation. Close collaboration will be sought with the ongoing United Nations Development Programme-Global Environment Facility program in the Ruvu catchment. All these plans shall refer to the strategic priorities of the basinwide IWRMD plans and priorities set out therein.

Importantly, planning will be linked to land use plans developed at district level by LGAs and broadly discussed with the Government, community, and other stakeholders. Support will be provided to recruit NGOs/service providers to help interface between the Government (LGAs, BWBs) and community activities in catchment management. In a number of areas, WUAs and CCs are still to be formed. This will follow an expedited process based on lessons learned during WSDP-I. The focus will be on functionality rather than facilities of the WUAs.

37. **Rehabilitation of targeted catchments and water security improvements.** This activity will finance interventions identified in microcatchment plans including (a) soil and water conservation for more sustainable and productive agriculture; (b) forestry and rural energy interventions to restore forest cover and reduce firewood consumption within the subcatchments; and (c) stream and water control, including check dams to support improved water management through smaller-scale structures built by community members. While relatively larger investments will depend on the completion of the IWRMD plan for Wami-Ruvu, smaller-scale conservation activities are no-regret interventions that can be implemented based on the diagnostic work on the basin and will start from the beginning of the project. This will also build capacity of the IA. Activities may also include development of groundwater uses for conjunctive use. The activity will support the activities through service providers (contracted) and works (contractors) and goods (equipment) for catchment management interventions.

38. **Preparation of priority water investments.** In addition to the catchment management activities and investments in Wami-Ruvu basin, all the IWRMD plans propose a number of smaller and larger investments, some of which are water investments and others are investments in other sectors that have a bearing on water resources. To support the basins in the implementation of the plans by multiple stakeholders, the program will support the preparation of water investments, through further screening, supporting feasibility studies, and subproject preparation. Criteria for inclusion under this activity is that (a) the investment is prioritized under the IWRMD plan; (b) the study can be completed within the project time frame and has a demonstrable beneficial water resources impact (preferably multisectoral); (c) there is reasonable expectation of future available financing; and (d) the studies pass a prefeasibility screening.

Component 2: Dar es Salaam Water Supply Improvement (US$87 million equivalent)

39. Dar es Salaam is one of the fastest growing metropolitan cities in Africa, and has also experienced the most rapid GDP growth of any city in Africa.[11] In population terms, it grew from 2.4 million to 4.4 million from 2002 to 2012 and this growth is expected to continue. This rapid process of urbanization is a trend that is being experienced nationwide. By 2027, more Tanzanians will live in urban areas than in the countryside, and Dar es Salaam will be a megacity with a population of more than 10 million.[12] However, so far investments in infrastructure and basic services provision such as water have not kept pace with population growth and are currently falling short of demand. Component financing includes GOT contribution of US$1 million equivalent).

40. Over the last few decades, the Dar es Salaam water and sewerage service provision has undergone a series of transitions. Initially a National Urban Water Authority responsible for development and management of water services in mainland Tanzania was created. With the advent of decentralization, this was subsequently broken up into area-based utilities and DAWASA was

[11] PwC 2014.
[12] World Bank. 2014. *Tanzania Economic Update*. 5th ed..

established to develop and manage water supply and sewerage services in Dar es Salaam and the adjacent areas of Bagamoyo and Kibaha. In 2003 with assistance from international development partners, DAWASA entered into a management lease contract with a private operator, which failed after less than two years. The private operator was replaced by the establishment of DAWASCO, a public operator tasked to operate the system under a lease agreement with DAWASA. As the transition from a private to a public operator was rushed to avoid a gap, DAWASCO operated under the terms of the lease contract that was established for private operator.

41. Since the previous Dar es Salaam WSS project closed in 2009, there have been limited investments (mainly through WSDP-I) in the improvement and development of water supply and sewerage infrastructure in Dar es Salaam. As a result, coverage has started to decline and it will be necessary for significant effort to be made to bridge the gap and eliminate the backlog in both infrastructure development, access to services, and improvement of operational efficiency. Currently, the water supply service in Dar es Salaam can be characterized as

(a) Poor coverage

- Water supply service coverage is estimated at 55 percent.[13]
- A very limited sewerage network (less than 10 percent) and a poorly managed WWT plant.

(b) Inefficient institutions

- Lower utilization of production and treatment facilities
- High NRW in Dar es Salaam > 50 percent
- A large number of inaccurate customer meters
- Nonfunctional or vandalized bulk meters

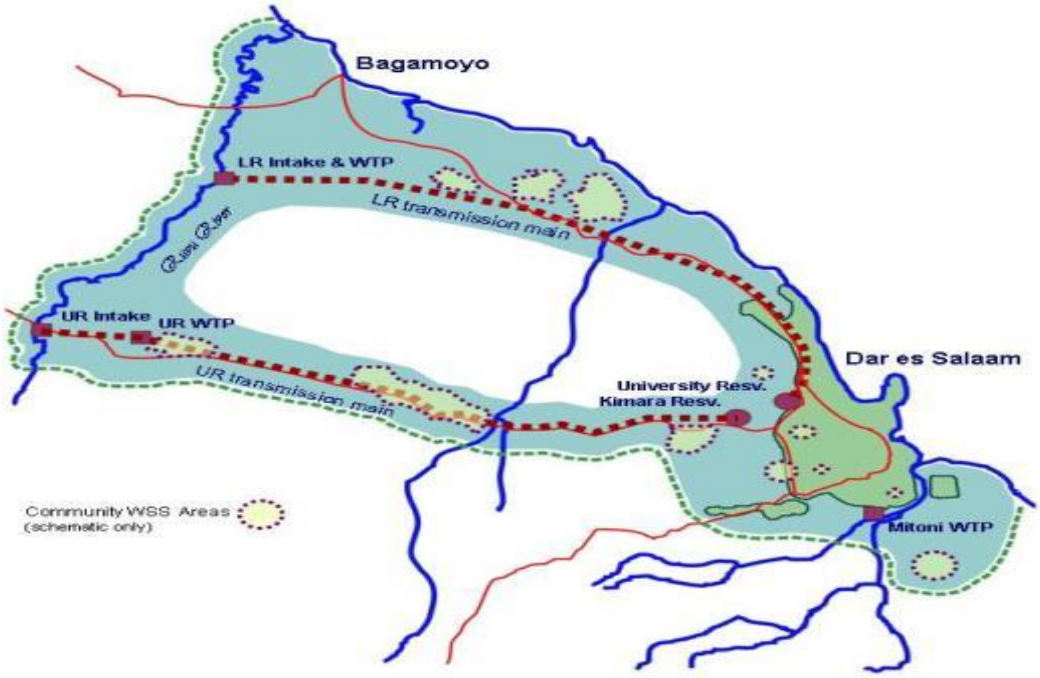
42. Current water production is 284,880 m^3 per day from three river intakes and groundwater sources while the daily demand is estimated at 450,000 m^3 with a daily supply deficit of 150,000 m^3 without factoring the commercial and technical losses. However, this will change significantly as ongoing WSDP-I projects are completed and come on stream. The expected increase in water from ongoing expansion activities financed under WSDP-I is estimated at 464,000 m^3 per day.

Table 2.3. Source of Water Supply for Dar es Salaam

Source	Plant	Current Production (m^3 per day)	Production from Ongoing Expansion Work (m^3 per day)
River Kizinga	Mtoni	5036	—
Ruvu River	Lower Ruvu	206,050	90,000
	Upper Ruvu	68,500	114,000
Boreholes	Boreholes	5,294	260,000
	Total	284,880	464,000

[13] EWURA annual estimate for 2016.

Figure 2.1. Dar es Salaam Water Supply Sources



Note: The available water is not evenly distributed leaving large parts of the city without or with intermittent service.

Figure 2.2. Dar es Salaam Water Supply Service Levels

43. DAWASA/DAWASCO recently undertook a feasibility and detail design study to expand the water supply network to unserved parts of the city. The preliminary finding from this study is that despite the additional capacity developed under WSDP-I, the population of Dar es Salaam will substantially outgrow the production by 2027. In addition to the effort to reduce the NRW, DAWASA and DAWASCO will therefore need to plan for development of additional sources and for the expansion of the network. The planned investment for network expansion is summarized in table 2.4.

Table 2.4. Summary of Planned Water Supply Expansion Projects

Package	Pipe (km)	Household Connections (#)	Population	Cost (US$)
2B and 2F	1426	75,500	410,000	43,000,000
4A1	671.6	125,967	1,298,250	73,862,547
4B1	645.6	121,557	1,030,274	70,264,353
4D	282	52,339	598,613	33,630,392
4E	400.3	71,643	841,757	49,783,705
Total	3,426	447,006	4, 178, 894	270,540,997
Supervision (5%)	—	—	—	13,527,049
Grand Total	—	—	—	284,068,047

44. The subcomponents below will support investments in the expansion of water supply services (Subcomponent 2.1); performance-based NRW reduction in Dar es Salaam (Subcomponent 2.2); and support to the ongoing institutional restructuring/reform of the Dar es Salaam WSS services and improve operational efficiency and modernization of the utilities (Subcomponent 2.3).

Subcomponent 2.1: Expansion of Water Supply Distribution in Unserved Priority Areas

45. This subcomponent will finance expansion of the water supply distribution system and off-grid WSS systems for areas that are not yet covered by the water supply network. The following activities have been identified for financing under this subcomponent.

46. **Water supply distribution systems rehabilitation and expansion (US$51 million equivalent).** This includes designated works part one (packages 2B and 2F) (Tegeta-Mpiji and Mpiji-Bagamoyo). These packages will install 1,426 km of pipes, 42 kiosks, and 214 stand posts and benefit 453,000 people by the end of the project.

47. **Off-grid water supply in unserved priority areas (US$6 million equivalent).** This activity provides water supply services to about 100,000 people of Dar es Salaam, who are not connected to the formal network. The proposed solutions for this population include decentralized interventions, which may be an interim measure to be integrated to the grid network as it expands in the future In areas, where the existing grid network is not available, independent stand-alone SPS systems will be implemented.

48. **Off-grid SPS.** The population of the designated area of DAWASA within the city of Dar es Salaam is 4.4 million. The grid network of DAWASA currently reaches about 60 percent of the population, which leaves about 40 percent of the population of the city (approximately 2 million people) without access.

49. In some of these areas, where the existing grid network has not reached, independent stand-alone water supply systems have been set up and are operating. These projects, SPS systems, typically

involve a source of water (for example, borewell), a community-based distribution system, and water points at community and/or household level. The O&M is supported from the tariff collected from the users. Currently, it is estimated that about 376 SPSs provide water to about 1 million people, predominantly in Temeke municipality,[14] followed by Ilala and Kinondoni[15] municipalities; they cover about 70 out of the 90 municipal wards, having a total population of 3.6 million people.

50. This project will rehabilitate, extend, or construct new systems in areas where the grid network would not reach in the next 5–10 years. These subprojects will be integrated into the main grid network of DAWASCO, once the expansion to these areas take place. They will therefore be designed in accordance with DAWASCO standards, to enable them to be eventually connected to the main network.

51. The overall responsibility for facilitation of these systems will fall with DAWASCO, which has the mandate of retail supply of water in Dar es Salaam. At the project level, a WC (if the expansion of grid network is less than five years away) or a Community Owned Water Supply Organization (COWSO)(if the expansion is beyond five years away) will be set up to operate and manage the system. The WC will be set up by DAWASCO/LGA, consisting of members from itself and the community; the COWSO will primarily have as its members the households from the community, with an operating body selected by the members from among themselves, with additional membership from DAWASCO/LGA.

52. The regulation of these systems, including the tariff, will be undertaken by the EWURA, as part of the overall regulation of the sector in Dar es Salaam.

53. The financing of the capital costs will be supported by the project, while the operational expenditure will be covered through tariffs levied on the system. The tariff for these systems will be the same as levied for the grid network in Dar es Salaam or different for each system based on its operating costs

54. An overall assessment of the tariff levied on water and sanitation services in Dar es Salaam, to understand the need for differential tariff for different categories of customers (household, commercial, nonprofit) and different consumption levels (basic life-saving, higher levels), will be undertaken, which will be applied for the tariff levied in these SPS systems as well.

55. The budget for the off-grid SPS system under the project is shown in table 2.5.

Table 2.5. Summary of Cost Breakdown for Small Water Supply Systems

Item	Project Cost (US$)
Capital cost of SPSs: 100,000 people at US$50 per capita	5,000,000
SPS communication campaign	100,000
TA technical and Quality Control support	100,000
Detailed citywide survey and project design	200,000
Capacity building	70,000
Study tours	30,000
Planning and policy support	50,000
Contingency	**500,000**

[14] Includes Kigamboni.
[15] Includes Ubungo.

Grand total	**6,000,000**

Subcomponent 2.2: Performance-Based NRW Reduction in Dar es Salaam (US$20 million equivalent)

56. This subcomponent will ensure that the Dar es Salaam utility improves its operational efficiency through the introduction of measures to manage demand and reduce losses. Through a performance-based NRW contract, leakage reduction activities will be carried out in targeted locations within Dar es Salaam to improve services (for approximately 1 million people) and save enough water to serve more people in adjacent areas. Payments will be made on the basis of demonstrated reductions in leakage. The scope of the PBC will include full DMA coverage of the assigned area. The DMAs will be established, bulk meters will be installed with a data transfer facility to the Supervisory Control and Data Acquisition system, distribution network will be documented in GIS, 100 percent customer's meters (commercial and noncommercial) will be installed for charging on volumetric basis, and illegal connections will be removed.

(a) **Develop a reliable customer database and correct classification of each customer**. Support the billing and collection process in the assigned area and establish a water balance for the DMAs to determine apparent and physical losses;

(b) **Reduce physical losses.** Active leakage detection through acoustic sounding, replacement of household connections, repairs and replacement of pipelines based on quality requirements of DAWASCO;

(c) **NRW management system.** Supply and installation of NRW management software; during the maintenance period the network will be handed over to the caretakers of DAWASCO.

Subcomponent 2.3: Institutional Restructuring/Reform and Utility Modernization (US$10 million equivalent)

57. This subcomponent will ensure that Dar es Salaam WSS institutions have the capacity and institutional and legal mandate to deliver services effectively. Activities will (a) support the ongoing restructuring of the two institutions responsible for service provision in Dar es Salaam, DAWASA and DAWASCO, and (b) strengthen the operational performance of both DAWASA and DAWASCO, following the adoption of their new roles as bulk supplier and distribution companies, respectively. This will focus on (a) legal and organizational setup for bulk supply contract arrangement, (b) business planning, (c) O&M of the water treatment plants (WTPs), (d) improved network management, (e) NRW management, (f) energy saving measures, and (g) improved customer metering and billing and collection.

Box 2.2 Institutional Reform for Dar es Salaam Water and Sanitation Provision

In 2014, the MOWI recognizing the inadequate performance of the institutions, launched an institutional reform initiative to improve the provision of WSS services in Dar es Salaam. Service delivery is inadequate because it is difficult to allocate responsibilities for service delivery failures at present. Having two players in the sector (as is the case in Durban) allows the regulator to access information and confirm facts related to performance and costing.

The newly proposed institutional arrangement involves changing the mandate, accountability, and relationship between the two institutions, whereby DAWASA will become the bulk supplier and DAWASCO will be responsible for the downstream distribution, retaining its function as the retail supplier of water and sewerage services. The lease agreement will be replaced by a performance-based bulk supply agreement. This provides scope for the new bulk services provider to work beyond its current area of operation.

A reform implementation road map that identified the reform activities has been drawn up by an RTT. Amendments to DAWASA act and DAWASCO establishment order have been drafted and are expected to be discussed and approved before the end of the extended lease period.

The reform has started to show noticeable improvement in the critical priority areas of provision of water supply services: meter reading and collection improved, computerizing customer database initiated, customer call center made operational, and water tankers registered and system established to regulate their operation. The Government has notified large public institutions to pay their arrears and the unpaid water bill will be deducted from their respective budget and transferred to DAWASCO.

In addition to the structural reforms, the WSSP-II is also supporting an innovative approach for triggering positive change in the organizational culture of the main counterpart agencies: DAWASCO and DAWASA through the World Bank's Developing Field-Level Leaders to Support Institutional Change for Improved Service Delivery (P159401) by a decentralized leadership development.

58. The RTT formed by staff drawn from relevant institutions and led by the Urban Water Supply director, supported by an international and a national consultant, has been engaged in preparation and implementation of the reform. The RTT drew up a road map for implementing the reform program in three phases. Implementation of the Institutional Reform Follows the Following Logical Sequencing:

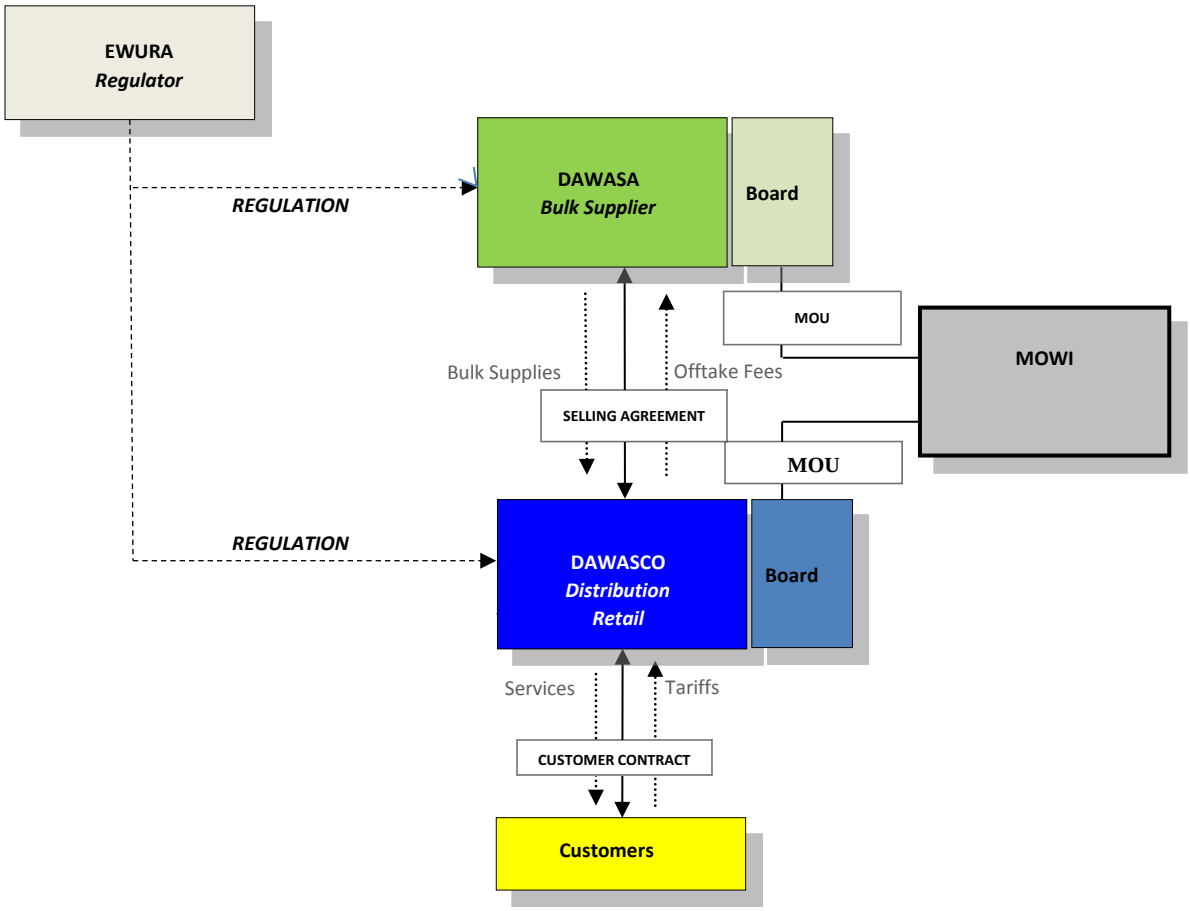
(a) **Pre-bulk supply contract phase.** This phase includes amending the establishment legal documents, developing and disseminating the reform principles and objectives to staff and public, establishing the relationships between the various stakeholders, defining the roles and responsibilities for WSS services provision and monitoring, determining the KPIs, signing the bulk supply agreement, transferring core staff and assets, agreeing on the transitional arrangement, and developing a business plan on the basis of the new mandates and responsibilities.

(b) **Transition phase.** Full Implementation of the reform is a process that takes time and goes beyond signing of the bulk supply agreement. A transitional arrangement will be agreed and implemented for 18 to 24 months. Under this phase, the staff and asset transfer will be completed, debt and liabilities will be defined and reassigned, KPIs refined, contract provisions further clarified, and long-term engagement agreed between the various stakeholders; potential public-private partnership options will be explored and feasible options will be piloted.

(c) **Implementation phase.** The two institutions will take full responsibilities of their respective mandates and operate based on the bulk supply agreement. The bulk supply agreement will be refined, staff and asset transfer completed, debt and liabilities reassigned, respective business plan developed. Given the continuous and dynamic nature of their engagement, they will need to establish a joint monitoring mechanism.

59. The institutional arrangements agreed for the new DAWASA and DAWASCO relationship are shown in figure 2.3.:

Figure 2.3. Dar es Salaam Water - New Institutional Arrangement



60. **Activities supported under WSSP-II**. Set out below is a summary of activities to be supported under WSSP-II in support of ongoing institutional reforms.

61. Immediate prerequisites for the bulk supply agreement to be implemented before the expiry of the current lease agreement by June 30, 2018.

(a) **Legal:** legislative amendments, bulk supply agreement, and transfer and transition agreement

(b) **Organizational:** staffing arrangements and organigram, workers affairs, salary issues, and communications plan

(c) **Financial:** asset inventory and allocation, balance sheet issues, and financial plan support

(d) **Business planning:** business and investment plan, asset management plan, and tariff setting preparation and process

(e) **Capacity building:** additional capacity building is proposed, including workshops and training for management

Change Management

62. In addition to the structural reforms, WSSP-II is also supporting an innovative approach for triggering positive change in the organizational culture of the main counterpart agencies: DAWASCO and DAWASA. This approach, based on a multiagent model of leadership development, relies on identifying and supporting field-level staff who have the potential of becoming the change agents in their respective institutions. The World Bank's Developing Field-Level Leaders to Support Institutional Change for Improved Service Delivery (P159401) is supporting the pilot implementation of this decentralized leadership development approach. The process creates a safe space for open dialogue, encourages entrepreneurial individuals to emerge, and motivates them to explore process improvements within their span of control.

Utility Modernization

63. This subcomponent will strengthen the operational performance of both DAWASA and DAWASCO after assuming their new roles respectively as bulk supplier and distribution companies. At the moment, the organizations are reactive to problems and a shift has to be made to get in control. Key issues to address across the boards of the companies are increasing accountability and responsibility, planning and procedures, organizational structure, and skills. A number of specific topics are paramount for overall performance improvement (a) O&M of the WTPs; (b) improved network management; (c) NRW management; and (d) improved customer metering and billing and collection.

(a) **Business and water supply planning.** This will improve the business planning processes, ensure reliable capital and operational expenditures, and include an investment plan and tariff study; second, it will include a water supply plan (demand and resources study) for the long term; third, it will included a water safety plan and water quality management plan (from source to tap) to improve procedures during stress situations and improve the water quality to Dar es Salaam.

(b) **O&M of the WTPs.** To increase operational efficiency and water quality and also accountability, the WTP's operations will be reviewed. Asset management, preventive maintenance planning, chemical consumption, and energy use will all be reviewed in a comprehensive effort to improve efficiency. Crucial to this is that the WTPs need to be fitted with online monitoring equipment for both water quantity and water quality parameters. Through better procedures, the water quality will improve, operational costs will go down, and pressure and flow can be optimized based on demand in the network, reducing NRW.

(c) **Network management.** To improve performance in the network, DAWASCO needs to establish clear roles and responsibilities for the main and distribution network. A central control unit is responsible for flow and pressure in the main network and the regional offices are responsible for multiple DMAs. Tasks for the central control will include hydraulic modeling, flow and pressure management and NRW reporting. To establish this unit, a Supervisory Control and Data Acquisition system will be installed (electromagnetic flow meters, pressure meters, and control unit), a hydraulic model will be provided, and asset management for the main network and NRW management system will be put in place.

(d) **NRW management.** Implementation of the NRW improvement program will require expertise that DAWASCO does not have at the moment. It will require operationalization of DMAs and strengthening of the regional offices. A TA involving on-the-job training in planning, implementing, and monitoring of NRW initiatives for reduction of technical and commercial losses with the ultimate aim of transfer of skill to the DWASACO staff and establishing NRW management systems will be provided under the project. With the transferred skill, DAWASCO will be able to maintain the results to be achieved under the PBC component.

(e) **Customer metering and billing.** DAWASCO is putting in tremendous effort to improve its customer database. This includes a complete survey of the customer database. Further support is needed on meter management for both domestic and commercial customers as well as for increasing the revenue through correct billing and collection. The support will include TA, meter management, billing equipment, computers, scanners, electronic document management system (EDAMS) water modeling training, customer service (call center applications, system training, computers, telephones, and transport [motor cycles, motor vehicles]), and meter reading efficiency.

(f) **General support.** Human resources (HR) and ICT support to NRW reduction and customer care will be provided. This covers GIS (satellite image, GIS license and Global Positioning System [GPS] equipment), material management, procurement, and FM.

Component 3: Dar es Salaam Sanitation Improvement (US$84million equivalent)

64. The total length of the sewerage network in Dar es Salaam is 238,000 m and the coverage is about 10 percent of the service area. There are 14 sewerage pumping stations and 8 oxidation pond sites, all located within the city. Sewage production is currently estimated at 322 million L per day while DAWASCO sewerage collection and treatment capacity is only 38 million L per day. About 70 percent of households use pit latrines. In the next 25 years, by 2032 sewage production is expected to reach 775 million L per day. Component financing includes GoT contribution of US$4 million equivalent.

65. Currently only 10 percent of Dar es Salaam residents are connected to the sewerage network. The sewerage system has 10 networks. The main network is the city center system which discharges into sea through the sea outfall pipeline; nine other networks are Lugalo, University of Dar es Salaam, Mwenge/Kijitonyama, Mikocheni, areas along Kilwa Road, Buguruni, Airport/Airwing, Pugu/Vingunguti, and Ubungo. Sewage from these systems is treated using oxidation ponds.

66. The following subcomponents outline areas of support for the expansion of sanitation services through construction of new WWT plant and sewer lines at Mbezi beach area and the mix of decentralized sanitation solutions for the unserved part of the city.

67. **Subcomponent 3.1: Wastewater Treatment and Sewerage Investment (US$67 million equivalent).** This activity will finance construction of a modern WWT plant at the Mbezi catchment with capacity of 11,000 m^3 per day; and the associated trunk sewer and network with 26,000 household connections to serve 130,000 people. A DBO approach will be used for this new WWT plant to fill the capacity gap and ensure that the system is managed and operated efficiently. The DBO option will allow for the involvement of the contractor in the operational phase, to enable hands-on training for DAWASCO staff, and a smooth hand over to DAWASCO after the contract is completed.

68. **Subcomponent 3.2: Off-Grid Sanitation (US$17 million equivalent)**. This activity supports a shift away from unimproved toilets to improved ones, safe emptying and transportation of the waste to a treatment facility, and treatment and safe disposal of the waste into the environment.

Background to Off-grid Sanitation

69. In addition to the central sewerage system, Dar es Salaam residents also rely on off-grid solutions, including septic tanks and latrines. The project will support further development of these off-grid solutions to ensure that households receive the full benefits of the improved water supply that is planned in Component 2; as well as direct benefits of improvements in health and hygiene from access to better sanitation options. In Dar es Salaam, according to current estimates, about 85–90 percent of the residents are currently not served from a sewerage network. Even with ongoing plans, the sewerage network is not expected to cover over 30 percent of the population, by the SDG (2030). A significant section of the population, therefore, depends on on-site sanitation, which includes pit latrines (75 percent), septic tanks (15 percent), and some open defecation. The waste from most of these facilities are not contained, transported, treated, or disposed properly. Because of the perceived high cost of pit emptying services,[16] which makes it unaffordable for most households in the city, the pits are emptied surreptitiously into open drains, water bodies, or generally into the environment. At a conservative estimate, about half of these facilities, estimated waste of 2,750 m^3 per day, are emptied and disposed off unhygienically. The resulting contamination of the environment, especially the groundwater, has led to recurring cholera and other waterborne diseases in Dar es Salaam every year.

70. Sanitation needs in Dar es Salaam is currently not undertaken safely and not managed properly. This includes clandestine emptying using manual labor, without safety gear, with disposal being unhygienic and polluting the environment. The transportation of fecal sludge from on-site systems is done by the private sector using unhygienic methods and discharged at DAWASCO's two oxidation ponds. The excessive loading of these ponds completely overwhelms their capacity. It is estimated that over 2,000 m^3 per day is being emptied manually, mostly in the low-income unplanned settlements.

71. Based on secondary and primary research, it is conservatively estimated that only half of the fecal waste in Dar es Salaam is disposed off safely.

72. In addition to household sanitation, the needs of sanitation in public areas are also not addressed adequately. These include busy common areas such as bus terminals, markets, and the central business district. Financing and institutional structures, especially for O&M, for these facilities may require dissimilar approaches to community/household ones.

73. The component of water quality through a comprehensive surveillance and testing framework is currently weak in the city. The absence of this makes the timely detection of cholera and other waterborne diseases difficult. A framework, which shall include community-based simple approaches to test fecal contamination, to more complicated testing at the laboratories to detect biological and chemical issues, is required.

74. Creating a safe and clean Dar es Salaam requires addressing issues of institutional clarity and coordination, technology options, financing of the infrastructure, O&M, and M&E.

[16] Ranging from TSh 50,000 to TSh 250,000 (approximately US$23–US$115 at 2016 exchange rates), depending on size of tankers, volume of sludge, and distance from nearest treatment facility.

Institutions

75. A strategy to address the poor sanitation in Dar es Salaam requires clarity of and coordination among the various institutions involved in the sector. However, institutional responsibility is fragmented and unclear, being divided between national ministries, city utilities, municipal organizations, regulatory authorities, and community-based organizations (CBOs), the informal private sector, and sanitation users themselves. Clarity on the roles and responsibilities of each at different phases of the sanitation chain, in addition to building capacity to perform their roles, is an important condition for success.

76. The current service delivery for sanitation is undertaken by a mixture of utilities, municipalities, and regulators. The institutions listed in table 2.6 are involved in the various stages of the sanitation chain.

Table 2.6. Summary of Institutional Role for Sanitation Provision

Ministry of Health/MOWI/PO-RALG	Policy and guidelines specific to FSM
MOWI	Overall project coordination and implementation support
EWURA	Regulate performance of DAWASA and DAWASCO
DAWASA	Facilitating the establishment and operation of treatment facilities (FSM and the like)
DAWASCO	Facilitating the development of options for transportation of this waste; establishment and management of public toilets; regulating the services of transporters
Municipalities	Facilitating the upgrading of unimproved household toilets to improved ones and regulation of waste disposal; facilitating the availability of land for decentralized systems; providing licenses to private transport operators
Private sector	Development of infrastructure for transportation and treatment, operation
NGOs	Capacity building, mobilization of community; media campaigns
Tanzania Bureau of Standards	Setting up of standards for effluent disposal
National Environment management Council (NEMC)	Regulation of disposal of effluent

77. The sanitation intervention in low-income areas will include a Behavior Change Communication component. At one level, messaging through interpersonal and mass media on adoption of improved sanitation and hygiene habits will be undertaken; on the other facilitation inputs will be provided to enable the mobilization of the communities, setting up of Community Based Organizations (CBOs) and their capacity building to manage the decentralized community-based sanitation systems. The role of the municipalities, especially the community health officers and the NGOs working in the sector, will play an important role in undertaking this.

78. The land required for setting up multiple decentralized systems will be facilitated by the Government through purchase/lease of private land or any other means.

79. The institutions responsible for O&M of the facilities is a critical issue. While the sewerage component will have DAWASCO and DAWASA responsible for the O&M of the transportation and treatment of the sewage, in the decentralized community option and public sanitation option, special

focus will be given to the institution which will be responsible for O&M. In most cases, this will involve setting up of new institutions, perhaps community-based, and building up their capacities to undertake this responsibility. In some cases, engagement of private operators for routine operations will mean identification and procurement of such entities, along with building up capacity within the responsible institution for such procurement and contract management.

80. The domestic private sector will be a major institution which will require to be involved for sanitation in low-income settlements. Their involvement will include approaches to empty fecal sludge from septic tanks—this could be through vacuum trucks, or in areas where access is difficult, small 'gulper' technologies. While the former may have lesser degree of challenges, there may be a need to facilitate the development of entrepreneurs who could operate the small-scale technologies successfully, in these difficult neighborhoods. The development of private operators for FSM plants and transportation will have the added benefit of creation of jobs in the sector; coordination with other programs, for example, the U.K. Department for International Development's (DFID) job creation project, will facilitate this.

81. The regulatory framework needs to be clarified and strengthened, as the regulation of off-grid sanitation is not fully clear. While the EWURA has the responsibility of regulating the sewerage system, and NEMC has the responsibility of the quality of the disposal. Whether these institutions already have, or will take on, the responsibility of off-grid sanitation will be addressed during the project.

82. Given the multiplicity of institutions with varying roles, a Steering Committee (SC) will be set up under the project to ensure coordination, synergy, and dovetailing. This SC will be newly set up or be adopted from some of the other projects (for example, Dar es Salaam Metropolitan Development Program [DMDP]) which may have similar steering mechanisms.

Technology

83. The intervention proposed under this project to remedy this status includes the shift away from unimproved toilet to improved ones, safe emptying and transportation of the waste to a treatment facility, and treatment and safe disposal of the waste into the environment.

84. In the short- to medium-term because of the nature of the settlements, multiple technology options, including decentralized options, will have to be considered for each part of the sanitation chain. Out of a menu of such options, a technology option suited for each area will have to be adapted.

85. These technological interventions will include improved sanitation facilities at households, safe containment of feces at household level, emptying the containment facilities in a safe and hygienic way, safe transportation, environmentally adequate treatment, and disposal.

86. The project will also support the establishment of toilets in public areas such as markets, bus stations, and other places where population congregate. Appropriate technological, financial and institutional models will be used to make these units operate sustainably.

Financing

87. The efforts to address the sanitation issue in Dar es Salaam will require investments into infrastructure, from the household to the treatment stage.

88. At the household level, investments may be required for upgrading the toilets, to improve them, or, where not available, to construct new toilets. These investments will be borne by the households themselves out of their own resources. Microcredit and similar financing options will be explored wherever available and feasible to support the household.

89. All other interventions, past the toilet, containment and emptying (if required), will be financed through a mix of external finance and cost sharing by the other stakeholders including the community; this will be on a case-by-case basis, depending on the approach adopted. This will include transportation and treatment of the waste, which could be through condominial sewerage systems, and decentralized wastewater treatment system (DEWATS), biogas, or similar decentralized treatment facilities. The investments required for this will also include the cost of land, a scarce and expensive commodity in these neighborhoods.

90. Sufficient funds will be made available for software activities in the project, including mass media messaging and facilitating the mobilization of the communities into local CBOs for operation and management.

91. A commercial approach shall guide the planning and implementation of the sanitation interventions. This will ensure the long-term sustainability of these interventions. In case of any subsidies, these shall be transparent, objective, and clearly understood. However, while undertaking this, it is important to manage the expectations from the sector on commercial returns from the interventions—for example, for production of biogas, paying for the investments has not been found to be a reality in many pilot projects.

92. The project will finance the capital costs of the treatment systems while the capital costs of transportation will be financed out of market credit. The operations of both the treatment system and transportation will be borne out of user fees.

Implementation of the Project

93. As about 90 percent of the city is currently not connected to the sewerage network and without access to a formal system of sanitation, the scale of the need in low-income areas is huge. This component will therefore be implemented through forming synergies with other interventions by the World Bank (DMDP, Urban resilience projects) and other partners. The implementation of the projects will be undertaken in collaboration with NGOs and other partners active in the sanitation sector in Dar es Salaam.

94. The project will involve decentralized technical solutions based on the geographical and social conditions of that area. The boundary of a subproject will therefore be based on social and geographical conditions. Multiple such interventions will be implemented across the city, each of which will follow the same set of principles, but which may be unique.

95. Given the limited resources available under the project, a prioritization will need to be undertaken. The prioritization will be based on need and other indicators, including equity:

(a) Unplanned settlements

(b) High population density

(c) Low-income areas

(d) Prevalence/risk of waterborne diseases

(e) No services

(f) Near-trunk infrastructure

(g) Availability of sufficient land for the interventions

96. Each of these criteria will be allocated a score, and the communities prioritized according to their total score. Keeping in mind the decisions of other interventions (for example, DMDP), WSSP-II will invest in those communities, which have the highest need.

97. The five municipalities will be the focal point for planning, prioritizing, and implementing the off-grid sanitation in their areas. A comprehensive master sanitation plan, based on empirical data and evidence, will form the basis for this planning and implementation.

98. The results of the ongoing efforts to map the city on the above indicators, will form the basis for the planning efforts by the stakeholders.

Phasing of the Project

99. The project aims at creating assets and operations, which are sustainable in the long run. To meet this objective, it is important to set up and/or capacitate institutions at all levels which will ensure this sustainability of operations. At the higher level, clarity and coordination is important between the various institutions who facilitate, implement, finance, regulate, and monitor. At the local level, community/user-based institutions which own and/or operate and maintain the facilities will be set up and their capacities built up.

100. These necessitate the mobilization of the community, including their understanding of the need for improved sanitation (according to the SDG), their buy-in, and their participation. Behavioral change, including hygiene behavior, will be an important outcome of the project.

101. An initial period of software inputs to change behaviors and set up, coordinate, and capacitate institutions will be undertaken. This will involve facilitation at various levels, as well as a Behavior Change Communication (interpersonal and mass media) campaign. Once the institutions are set up and their capacities build, investments will be undertaken to build the infrastructure; this will not, however, follow a linear path, with overlaps between software and hardware interventions.

Monitoring and evaluation

102. The project will facilitate the setting up of a monitoring system which will track a suite of indicators, which will include the World Bank core indicators as well as the SDG ones:

- Percentage of people having access to improved sanitation, of which female
- Percentage of poor people having access to improved sanitation, of which female
- Percentage of the fecal sludge in the city disposed of safely

103. The online-based Dar es Salaam sanitation map will form the basis of the monitoring system, which will provide statistical and visual updates on the status of sanitation in the city.

104. The monitoring system shall triangulate with collection of information through the routine monitoring system, a periodic third-party system, with results displayed on publicly accessible dashboards (in line with the Open Government initiative of the GoT).

105. The project will also undertake evaluation of the various processes, outputs, and outcomes to ensure that these are contributing to meet its objectives.

Capacity Building and R&D

106. The project will have a capacity-building component for the various stakeholders, including the Extension Health Officers (EHOs), community development staff, private sector operators of FSM plants and pit emptying-transportation services. The focus of the capacity building will be both behavioral and technical issues.

107. The project will also undertake research and development activities on the technical, social, and financial aspects of off-grid sanitation. This will include the effectiveness of the FSM technology in meeting the outcomes, efficiency of the pit-emptying and transportation services, effectiveness of the behavioral change communications, and financial efficiency of all components.

108. The capacity building and research and development activities will be undertaken in collaboration with the water institute and other academic institutions, such as Universities of Dar es Salaam and Ardhi.

Table 2.7. Summary of Cost Break Down for Off-Grid Sanitation

Item		#	Unit	Unit Cost	Project Cost
FSM operations					**11,500,000**
	Decentralized FSM treatment	50	Unit	120,000	6,000,000
	Transfer stations	25	Unit	40,000	1,000,000
	Medium size fecal sludge treatment plants	3	Unit	500,000	1,500,000
	FSM social marketing and community development	50	Unit	20,000	1,000,000
	FSM enterprise development	75	Unit	20,000	1,500,000
	FSM communication and marketing campaign	—	—	—	500,000
FSM TA					**1,000,000**
	TA technical and Quality Control support	—	—	—	1,000,000
Condominial sewerage					**1,500,000**
	Condominial sewerage (250 houses/scheme)	3	Scheme	500,000	1,500,000
City-level support					**350,000**
	Detailed citywide survey and project design	—	—	—	200,000
	Bylaws and regulatory development	—	—	—	50,000
	EHO training	—	—	—	50,000
	Study tours	—	—	—	50,000
National-level support					**50,000**

	Planning and policy support	—	—	—	50,000
Public toilets complexes					**600,000**
	Public toilets	30	Toilet blocks	20,000	600,000
Grand total		—	—	—	**15,000,000**

Component 4: Project Management and Implementation Support (US$9 million equivalent)

109. The overall objective of this component is to strengthen the ability of the PCU and the PMU in the MOWI and implementation agencies to implement and manage the project. It also aims to provide capacity-building assistance in WRM and service delivery improvement in Dar es Salaam. This objective will be achieved by implementing the following activities:

(a) Support to project coordination and management units in the MOWI and the IAs at the basin and utility levels

(b) Capacity building for WRM and WSS management and service improvement

(i) **Capacity building for WRM.** In addition to the WRM-specific capacity building provided in the component, this component will support capacity to plan, manage, and monitor the subcomponent. It also provides complementary capacity building and facilitation support to the cross-sectoral planning and coordination for IWRM.

(ii) **Capacity building for Dar es Salaam WSS institutions.** Cross-cutting capacity-building initiatives for program monitoring and performance management activities by the EWURA will be supported under this component. Exposure visits to countries with similar institutional reform experience and study tours to learn about options for decentralized on-site sanitation technology and management will also be supported under this component.

(iii) **Technical assistance.** As the project involves institutional development and reform activities, this component will provide support to short-term TAs to address issues unfolding in the course of implementation, public-private partnership option studies, and on-the-job trainings.

110. WSSP-II will be implemented at national, basin, city, and sub-basin and local government levels and will also involve beneficiary communities. Overall coordination of the project will be carried out by the PCU, which will be responsible for overall coordination of project planning, reporting, and supervision. The PCU will also oversee across divisions and agencies within the WSDP implementation framework. A PMF will be hired to support the PCU and build the MOWI's program implementation capacity (reporting, M&E, procurement, and FM).

Annex 3: Implementation Arrangements

TANZANIA: Second Water Sector Support Project

Project Institutional and Implementation Arrangements

1. The project will be coordinated by the MOWI at the center while at the decentralized level, the basin offices, LGAs, WUAs, and CCs will implement water resources-related activities and DAWASA, DAWASCO, and municipal councils of Dar es Salaam metropolitan area will implement the Dar es Salaam component. The program coordination office of the MOWI will be in charge of overall coordination under the umbrella of the WSDP.

2. The project's institutional and implementation arrangements have been designed to align with existing structures, enhance coordination and synergies across the different departments, and implement the principles of the IWRMD across water, environment, and related sectors from the central to the local levels. To facilitate integration within the sector, an MOU outlining joint responsibilities will be signed between the MOWI and agencies that will be tasked with carrying out specific activities (for example, BWBs, LGAs, and water utilities). These arrangements and the requisite tools (sample MOU, reporting formats, and so on) will be detailed in the PIM, which is a live document and will be updated periodically to adapt to changing circumstances.

3. The NWB will be strengthened to deliver on its mandates. As part of the improvement in water resources data management and analytical capacity, a Water Resource Center of Excellence will be established and be operational. The NWB is comprised of multiple sector ex officio representatives, and the proposed Water Resource Center of Excellence will be tasked with policy advice on multisector strategy issues.

4. DAWASCO will establish a customer forum that will meet quarterly and will constitute representatives from the various segments of customers. Feedback and suggested improvements will be factored into the utility's annual planning

5. A description of the day-to-day implementation arrangements that will be carried out under each component is provided in the following paragraphs.

6. Component 1 will be implemented at central, basin, and sub-basin/local levels.

7. Subcomponent 1.1 aims at strengthening water sector institutions and building coordination capacity across sectors. The WRM and water quality departments in the MOWI will implement the project's institutional and water resources information development aspects and provide oversight to activities implemented at the basin and sub-basin levels. Coordination will further be enhanced through more effective utilization of sector coordination mechanisms such as the Technical Working Groups. In particular, coordination with nongovernment stakeholders will be strengthened taking advantage of coordination efforts under the 2030 Water Resources Group, a platform for water resources coordination with good representation of private sector stakeholders.

8. The strengthening of the NWB and the establishment of the Centre of Excellence will be guided by the interministerial coordination team, led by the MOWI.

9. Activities specifically targeted at improving performance of water sector institutions (ministry, BWBs, and WUAs) will be implemented at the respective levels, continuing the use of performance management tools for diagnosis and target capacity development. These activities are closely aligned with TA planned through GIZ and DFID support. A priority activity is the financing options assessment for sustainable financing mechanisms for the different sector institutions. This activity was carried over from WSSP-I and is critically to ensure secure funding for decentralized agencies. This activity will start during WSSP-II project preparation and recommendations will be streamlined in implementation arrangements and funds flow. Budget for basin-level activities under the project will be earmarked to BWBs, and BWBs will be supported on their reporting and fiduciary responsibilities.

10. Subcomponent 1.2 will be implemented by BWBs and MOWI (Department of Water Resources and water quality division). Assessments and pilots under phase I have generated important implementation lessons that are incorporated in the design, among others the importance of building on end-user requirements, managing operating costs, making data accessible to the general public, and most importantly having a dedicated staff complement at BWBs and Department of Water Resources/water quality division to maintain and use the system from instrumentation through collection, to analysis and dissemination. Comprehensive training and budget will be made available for this task team, and TA will be deployed for the initial years of rolling out and improving the system. This subcomponent will be coimplemented with the TMA on aspects of meteorology forecasting and observation.

11. Subcomponent 1.3 will be coordinated by the three selected BWOs. The CCs, SSCs, and the WUAs in coordination with the LGAs will implement conservation, catchment protection, watershed management activities in micro-watersheds, while larger activities, subcatchment planning, and coordination will rest with the BWOs. Implementation lessons learned from the LVEMP (I and II), among others, are that environmental benefits must be strongly linked to improved livelihoods for local people and communities and that institutional sustainability requires project implementation through existing structures. Under the LVEMP, activities have been carried out by LGAs, and in most areas, they will have some experience implementing similar programs. The project will support training and capacity building to enhance their effectiveness. At the LGA level, District Facilitation Teams comprising different sector specialists and frontline staff will be tasked with ensuring adequate technical support and supervision of the subprojects. The WUAs will mobilize local stakeholders and communities in the planning and implementation of conservation activities. TA will be mobilized in each of the three basins to support the planning process and support the implementation. This TA will be housed with the BWBs and will liaise frequently with the LGAs. Specific implementation arrangements will be defined in the PIM which will include a specific section on the implementation of community-driven watershed management activities. The role of the BWB is to ensure there is higher-level strategic planning at the basin and sub-basin level, and that simple prioritization and planning tools are used (for example, World Overview of Conservation Approaches and Technologies (WOCAT) tools for identifying land management priorities). The BWBs will also assist in the M&E of the execution of the plans. Community-based M&E will track the performance and impact of watershed rehabilitation subprojects and build on institutional arrangements in place for this.

12. Monitoring of Component 1 activities, overall performance assessments of BWBs, financial allocations, and impacts of these activities will be included in the ministry's management information system, which will have a specific module to track water resources investments and outcomes.

13. Component 2 and 3 will have several subcomponents dealing with the institutional reform and strengthening; improved access to water supply services, improved sewerage and off-grid sanitation service improvement; and operational efficiency improvements including NRW management. The institutional reform activities will be coordinated by an RTT established in the MOWI with oversight from the Urban Water Supply (UWS) division. The current RTT established during project preparation will be strengthened to enable it to implement the reform efficiently. DAWASCO and DAWASA in cooperation with the municipalities will implement the water supply and sewerage and the off-grid sanitation activities. Institutional and implementation arrangement for the off-grid sanitation is discussed in the off-grid sanitation section above.

14. Component 4: The MOWI -PCU for WSDP will be responsible for overall coordination of the project under the SWAp umbrella. A PMF that will be hired under WSDP-II will provide program management support and build capacity of the IAs at various levels, including in DAWASA and DAWASCO. As ongoing reforms are likely to lead to some changes in the structure and functions of DAWASA and DAWASCO, the following responsibilities may be adjusted during the course of the project:

(a) In support of Component 1: support will be provided to the BWBs and BWOs to enable them to fulfill their mandates. The PCU will provide assistance in areas such as procurement and FM. The PMF will assist with contracting, MOUs, and other complex aspects of the IWRM component.

(b) In support of Components 2 and 3: DAWASCO will assign experts in the areas of procurement and safeguards management to ensure compliance with agreed procedures. Implementation of the physical, software, and reform activities will be mainstreamed in the existing structure including the technical, commercial, finance, ICT, and HR departments. The overall program will be coordinated by the planning department.

(c) In support of Components 2 and 3: DAWASA will follow a similar arrangement and streamline project activities within its existing structure with the technical departments remaining responsible for overall coordination.

(d) In support of Component 3: a sanitation coordination team led by PO-RALG will be established to coordinate implementation of the offsite sanitation services. The technical department in the municipalities in coordination with DAWASCO will be responsible for implementation of the offsite sanitation component.

(e) For the overall program: the expanded Development Partners Group (DPG) water secretariat will coordinate joint GoT-development partner implementation review and supervision missions and will serve as a channel for document exchange between the PCU and the World Bank.

Table 3.1. Institutional Framework

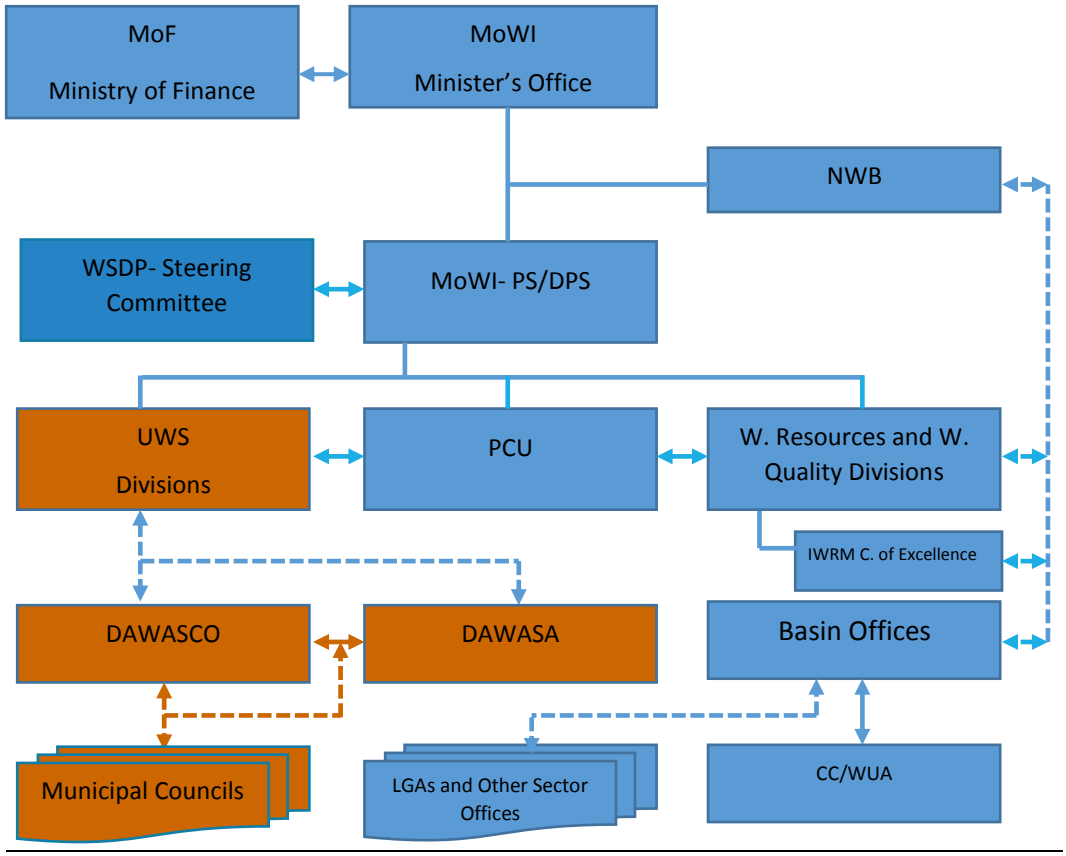
Institution*		Component	Role
Ministry of Finance		WSSP-II all	• Financing of the project
MOWI	MoWI - PS/DPS	WSSP-II all	• Leadership and overall coordination
	Directorate of Water	Component 1: Integrated Water	• Coordination and monitoring • Implementation of national-level IWRM activities

Institution*		Component	Role
	Resource	Resources Management	
	Directorate of Urban WSS	Component 2: Dar es Salaam Water Supply Improvement	• Coordination and monitoring • Financial allocation
	PCU/PMU	WSSP II All	• Overall coordination and implementation support
Ministry of Health			• Policy and guidelines on urban sanitation
NWB	Centre of Excellence	Component 1: Integrated Water Resources Management	• Coordination of water resource use across sectors
Basin offices		Component 1: Integrated Water Resources Management	• Implement capacity building, and the IWRMD plans • Manage the water resources in the basin
District councils		Component 1: Integrated Water Resources Management	• Facilitate local-level coordination and regulations
WUAs		Component 1: Integrated Water Resources Management	• Management of water resource for irrigation and other uses
DAWASA		Component 2: Dar es Salaam Water Supply Improvement	• Bulk water production
DAWASA		Component 3: Dar es Salaam Sanitation Improvement	• Planning and implementation of WWT plan
DAWASCO		Component 2: Dar es Salaam Water Supply Improvement	• Retail water planning, implementation and monitoring - distribution network, SPS, tanker supply • Planning and implementation of off-grid water supply
DAWASCO		Component 3: Dar es Salaam Sanitation Improvement	• Planning and implementation of sewerage network systems • Planning and implementation of off-grid sanitation - transportation, treatment, and disposal at FSM plants
Local Government	Regional Secretariat	Components 2 and 3: Dar es Salaam WSS	• Cochair - Leadership of the SC
	Municipalities	Component 3: Dar es Salaam Sanitation Improvement	• Regulation of household toilets • Identify and facilitate land acquisition • Public awareness campaign. • Support for IUWM
EWURA		Component 2: Dar es Salaam Water Supply Improvement	• Regulation of the tariffs for water and sanitation • Monitor utilities performance
NEMC		Components 2 and 3: Dar es Salaam WSS	• Approval environmental safeguard plans • Regulation of the disposal of the effluents according to standards
Private sector		Component 3: Dar es Salaam Sanitation	• Operation of the FSM plants • Operation of the pit emptying and transportation

Institution*	Component	Role
	Improvement	services • Operation of SPS
NGOs/CBOs	Components 2 and 3: Dar es Salaam WSS	• Awareness generation • Capacity building of stakeholders • Operations of the SPSs and FSM plants

Note: * Secondary stakeholders include the Ministry of Land and Planning, Tanzania Bureau of Standards, media, and Tanzania National Roads Agency (TANROADS).

Figure 3.1. WSSP-II Institutional Arrangement



Financial Management, Disbursements and Procurement

Financial Management

15. A FM assessment of the implementing entities—MOWI, DAWASA, and DAWASCO—was carried out in July 2016 and updated in October 2016 in accordance with the World Bank Directive: Financial Management Manual for World Bank Investment Project Financing Operations issued on February 4, 2015, and effective from March 1, 2010, and the World Bank Guidance: Financial Management in World Bank Investment Project Financing Operations, issued and effective from February 24, 2015.

16. The objective of the assessment was to determine whether: (a) the implementing entities have adequate FM arrangements to ensure that project funds will be used for the purposes intended, in an efficient and economical way; (b) project financial reports will be prepared accurately, reliably, and on time; and (c) the entity's assets will be safeguarded. The assessment concluded that there are adequate

and acceptable FM arrangements in place at the three institutions. Weaknesses in FM include: accounting software of DAWASA and DAWASCO not being able to generate project financial reports directly from the system; vacant managerial positions in the finance and accounts department of DAWASCO; limited staff knowledge in DAWASCO regarding the World Bank's FM and disbursement guidelines; and weak internal audit. To mitigate these fiduciary risks, a number of capacity-building interventions have been identified and required staff are being hired by the IAs to fill the capacity gap.

17. The overall FM risk rating for the project is Substantial while the mitigated risk is Moderate. This risk will be continuously monitored throughout the implementation phase of the project. The detailed results of the assessment are indicated in the following sections.

18. **Budgeting.** At all the implementing entities visited, preparation of the Annual Work Plans and Budget is participatory with the bottom-up approach used. However, this approach has some challenges, especially where there is no feedback from the top to the bottom with regard to the finalized budget based on the ceiling from Treasury. This needs to be addressed going forward. The planning and budgeting is based on the laid-down policies and procedures as well as guided by regulations and guidelines. All the three implementing entities produce quarterly budget versus actual reports showing variances that are discussed at the senior management level. The budgets clearly show physical and financial targets. Budgets are prepared with sufficient details that help the implementation and monitoring of these activities. In this regard, the budgeting arrangements are considered adequate.

19. **Accounting.** The policies and procedures are laid out in the Financial Regulations manuals for each implementing entity. The regulations describe the accounting system, policies, and procedures, that is, the accounting records, supporting documents, computer files, chart of accounts; the accounting processes from the initiation of a transaction to its inclusion in the financial statements; authorization procedures for transactions; and the financial reporting process used to prepare the financial statements. The entities have accounting systems that allow proper recording of financial transactions as well as allocation of expenditures to the right categories. Controls regarding preparations, approval, and authorization of transactions are in place. The chart of accounts is comprehensive and expandable to accommodate different user requirements. The chart of accounts is adequate to properly account for and report on project activities. The project shall maintain adequate financial and accounting records in accordance with International Financial Reporting Standards for DAWASCO and International Public Sector Accounting Standards for DAWASA and the MOWI. All the three implementing entities produce quarterly FM accounts including variance analysis that are discussed at the senior management level. The project shall maintain adequate financial records in accordance with accepted international accounting standards and practices and in accordance to Public Financial Act 2004 and its guidelines.

20. **Information systems.** The MOWI uses the Epicor accounting software as well as the management information system while DAWASA uses Pastel and DAWASCO uses SAGE Pastel Evolution accounting software to capture data as well as report on use of project funds. The MOWI has been using this system for the just-closed WSSP-I. The system is able to produce the necessary project reports and the staff are well-trained on the use and maintenance of the system. As for DAWASA and DAWASCO, their systems are standard accounting software that can produce standard reports but not project-specific ones. There is, however, a need to customize/configure the two accounting systems so as to be able to directly produce project financial reports in the form and content required by the World Bank. Confidentiality, integrity, and availability of data is well safeguarded by the systems of the three entities.

21. **Staffing arrangements.** At the MOWI, the finance and accounts department is headed by the chief accountant who reports to the permanent secretary (accounting officer). The finance and accounts department has 82 skilled and experienced accountants stationed at both the headquarters and regional offices. All these staff are qualified and experienced to carry out their respective duties. All the positions at the MOWI are filled. At DAWASA, the finance department is headed by the director of finance who reports to the chief executive officer (CEO). The CEO in turn reports to the Board of Directors (BoD). The BoD has committees that include the Finance and Audit Committees. The head of finance supervises the managers to whom the senior accountants and accountants report to. The department has eight skilled and experienced accountants. One position of accounting manager is vacant at DAWASA and is expected to be filled before project effectiveness. At DAWASCO, the director of finance heads the finance and accounts department and reports to the CEO. The CEO in turn reports to the BoD. The BoD has committees that include the Finance and Audit Committees. The head of finance supervises the managers to whom the senior accountants and accountants report. The department has 10 skilled and experienced accountants. Three managerial positions of finance accounting, debt recovery, and management accounting and costing are vacant. However, there are qualified and experienced officers who are currently acting in these positions. The main reason for the vacant positions is that the organization structure was only approved in June 2016 and the recruitment is scheduled to commence immediately. Unlike the other two implementing entities, DAWASCO has not implemented a World Bank-supported project before and therefore does not have any experience. In this regard, it is recommended that an experienced and qualified project FM consultant be hired to support the implementation of the project. Except for DAWASCO, all the other implementing entities have implemented World Bank-supported projects before and so do have the required experience. All the heads of department are professional accountants who are holders of both CPA (Certified Public Accountant) (T) and master's degrees. They are also highly skilled, trained, and experienced. The assessment also revealed that only the ministry staff are conversant with World Bank FM and disbursement guidelines and requirements. To this end, there is need to train the finance and accounts staff on the World Bank FM and disbursement guidelines and requirements.

22. **Internal controls.** Internal controls comprise processes and practices designed to provide reasonable assurance to management (and other stakeholders) that operations are carried out effectively, efficiently, and in compliance with laws and regulations. Internal control systems at all the three entities are well-documented in their finance and accounts manuals. The internal control systems describe the accounting system, that is, the accounting records, supporting documents, computer files, and chart of accounts; the accounting processes from the initiation of a transaction to its inclusion in the financial statements; and authorization procedures for transactions. It also describes the financial reporting process used to prepare the financial statements. A review of the internal control system revealed that there are adequate internal controls in place which can be relied upon to manage funds of this project.

23. **Internal audit.** The MOWI internal audit function is headed by a qualified and experienced chief internal auditor (CIA). The CIA is a CPA and Master of Finance degree holder with over 15 years of experience. The department is adequately staffed with skilled and experienced internal auditors who have undergone a number of trainings and capacity building. At DAWASA, the manager of internal audit is a CPA holder and also holds a Master's degree in finance. The audit manager reports to the director quality assurance. The department is composed of four staff who are adequate to carry out the internal audit tasks. At DAWASCO, the internal audit department comprises seven staff headed by the acting internal audit manager. However with the recent approval of a new organization structure for DAWASCO, the department has found itself with a new position of CIA that is not yet filled. The staffing

levels, after the filling of the CIA position, are adequate. All the three internal audit functions use a risk-based audit approach to carry out their work. The departments have audit charters, budgets, annual work plans, and audit programs. Audit manuals are in place to guide the work of internal auditors. Board audit committees do exist, to which the internal audit functions report to functionally. The departments report to the CEOs administratively. The audit committees meet quarterly. Given that DAWASCO and DAWASA have not implemented any World Bank projects in the recent past, there is need to have the internal auditors trained on the World Bank's FM and disbursement guidelines and requirements. The assessment has also revealed the need to build the capacity of the internal auditors so as to carry out specialized audits such as procurement, performance, contracts, and technical audits. There will be need to build capacity of the internal audit functions to enable them carry out specialized audits.

24. **Financial reports.** Interim financial reports (IFRs) will be prepared at the end of each calendar quarter and submitted to the World Bank no later than 60 days after the end of such calendar quarter by each of the three implementing entities. The format and content of the IFRs have been discussed and agreed with the Government during negotiations. The IFRs will include Sources and Uses of Funds Statement, Uses of Funds by Project Activity/Component, Designated Account Activity Statement, and Physical Progress (Output Monitoring) Report. The financial statements will be prepared in accordance with International Financial Reporting Standards. The IDA Credit Agreement will require the submission of audited financial statements to the World Bank within six months after the financial year end. These financial statements will comprise of a Statement of Sources and Uses of Funds/Cash Receipts and Payments which recognizes all cash receipts, cash payments, and cash balances controlled by the entity and separately identifies payments by third parties on behalf of the entity, a Statement of Affairs/Balance Sheet as at the end of the financial year showing all the assets and liabilities of the project, and the Accounting Policies Adopted and Explanatory Notes. The Explanatory Notes should be presented in a systematic manner with items on the Statement of Cash Receipts and Payments being cross-referenced to any related information in the notes. Examples of this information include a summary of fixed assets by category of assets, and a summary of Statement of Expenditure Withdrawal Schedule, listing individual withdrawal applications, and a Management Assertion that World Bank funds have been expended in accordance with the intended purposes as specified in the relevant World Bank legal agreement.

25. **External audit.** The Controller and Auditor General (CAG) is primarily responsible for auditing of all ministries, departments, and agencies in Tanzania. In this regard, this project will also be audited by the CAG. However, there are some instances where, at the discretion of the CAG, the audit may be outsourced to a CPA firm, with the final report being issued by the CAG, based on the tests carried out by the CPA firm. In this case, the audit firms to which the audit is outsourced should be among those that are acceptable to IDA. In the event that the audit is subcontracted to a firm of private auditors, IDA funding may be used to pay the cost of the audit. The audits will be done in accordance with International Standards on Auditing. The external audit terms of reference has been agreed upon with the implementing agencies. Furthermore, the National Audit Office will need to be informed of this new project and the implementing entities. The audit report together with the management letter for each of the three implementing entities will be submitted to the World Bank no later than six months after the end of the financial year. The project is required to disclose the audited financial statements in a manner acceptable to the World Bank. Following the World Bank's formal receipt of the audit report from the project, the World Bank will make them available to the public in accordance with the World Bank Policy on Access to Information. In this regard, the audit arrangements are adequate for this operation.

26. **Use of country systems.** The project will be mainstreamed into the government FM systems. Budgeting, accounting, internal controls, reporting, internal audit, and external audit will be carried out using government guidelines, policies, procedures, rules, and regulations. Oversight of the project will be provided by government oversight bodies such as the audit committees and parliament public accounts committees of both central and local governments.

27. **Governance and anti-corruption.** DAWASA and DAWASCO have BoDs that oversee the operations of the authority and company. The process for appointing and removing the directors is sound. The accounts of the three entities, including the MOWI, are subject to external audit by the CAG of the United Republic of Tanzania. Each of the three implementing entities have developed websites which are up and running. Relevant information can be found on these websites including reporting such information that may affect the operations of these entities. Complaints handling mechanisms in place are weak and there is need to strengthen them by use of dedicated hotlines, dedicated email accounts, easily accessible complaints desks, and suggestion boxes. These should be used for reporting any form of corruption or fraudulent activities as well as general complaints. An effective system of complaint handling, with transparent investigation and reporting of the results will also be established.

Disbursements

28. WSDP-I has experienced extensive delay in transfer of fund from the Designated Account (DA) to IAs that resulted in poor performance of several contracts due to delay in payment for executed activities. Learning from this, the MOWI has proposed opening up DAs and Tanzania shilling accounts managed by the MOWI and the IAs for the Dar es Salaam component of the project. Each implementing entity will maintain two bank accounts: (a) U.S. dollar DA; and (b) Tanzania shilling project account for the purposes of implementing the project. The DA and project account will be opened and maintained at the Bank of Tanzania. Transfers from IDA will be made into the DA from where U.S. dollars payments as well as transfers to the project account will be made. Payments from the project account will primarily be to meet transactions in local currency (Tanzania Shillings). Also direct payments, from IDA to third parties on instruction of the implementing entities, will be carried out. The following chart reflects the proposed fund flow subject to the detailed assessment and Ministry of Finance agreement.

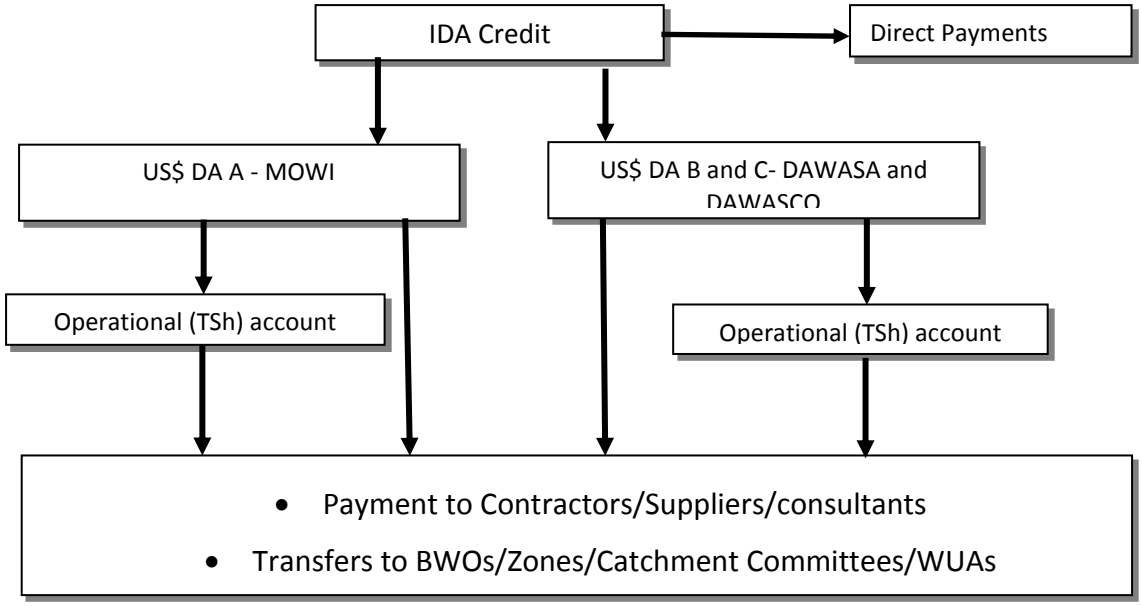


Figure 3.2. Project Fund Flow

Procurement

29. **General.** Procurement under the project will be carried out in accordance with the World Bank's Guidelines: Procurement of Goods, Works, and Non Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, dated January 2011, revised July 2014; Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, dated January 2011, revised July 2014; Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, dated October 15, 2006 and revised in January 2011; and provisions stipulated in the Financing Agreement. The various items under the different expenditure categories are described below in general. For each contract to be financed by the credit, different procurement methods or consultant selection methods, estimated costs, prior review requirements, and time frame will be agreed upon between the Government and the World Bank in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. The implementing entities, as well as contractors, suppliers, and consultants will observe the highest standard of ethics during procurement and execution of contracts financed under this project.

30. The Public Procurement Act, 2011 as amended through the Public Procurement (Amendment) Act, 2016 will be applied for procurements below the defined thresholds involving National Procurement Procedures. The Public Procurement Act, Act No. 7 of 2011, has been reviewed by the World Bank and found to be consistent with World Bank Procurement Guidelines, except for the provisions of Clause 54 of the act, which permits application of national preference in bid evaluation under NCB. There should be no preference accorded to domestic suppliers and contractors under NCB

for goods and works. Furthermore, in accordance with paragraph 1.16(e) of the Procurement Guidelines, each bidding document and contract financed out of the proceeds of the credit shall provide that (a) the bidders, suppliers, contractors, and subcontractors shall permit the World Bank, at its request, to inspect their accounts and records relating to the bid submission and performance of the contract, and to have said accounts and records audited by auditors appointed by the World Bank; and (b) the deliberate and material violation by the bidder, supplier, contractor, or subcontractor of such provision may amount to an obstructive practice as defined in paragraph 1.16(a)(v) of the Procurement Guidelines.

31. **Procurement of civil works.** Civil works to be procured under this project will include: (a) rehabilitation and expansion of water supply distribution system; (b) WSS services in unserved priority areas; and (c) WWT and sewerage system, and so on. Procurement will be done under International Competitive Bidding (ICB) or NCB procedures using the World Bank's Standard Bidding Documents for all ICB and National Standard Bidding Documents agreed with or satisfactory to the World Bank for all NCB. Small value works may be procured under shopping procedures. Direct contracting may be used where necessary if agreed in the Procurement Plan in accordance with the provisions of paragraph 3.7 to 3.8 of the Procurement Guidelines.

32. **Procurement of goods.** Goods to be procured under this project will include: equipment for ICT support to NRW reduction and customer care (GPS equipment, computers, scanners, and so on); equipment for operationalization of DMAs (electromagnetic flow meters, turbine flow meters, and customer meters), and so on. Procurement will be done under ICB or NCB procedures using the World Bank's Standard Bidding Documents for all ICB and National Standard Bidding Documents agreed with or satisfactory to the World Bank. Small value goods may be procured under shopping procedures. Direct contracting may be used where necessary if agreed in the Procurement Plan in accordance with the provisions of paragraph 3.7 to 3.8 of the Procurement Guidelines.

33. **Selection and employment of consultants.** Consultancy services will include those for studies for improved WRM, preparation of priority investments, supervision of infrastructure works, TA, and so on. The selection method will be Quality and Cost-Based Selection (QCBS) method whenever possible. Contracts for specialized assignments estimated to cost less than US$300,000 equivalent may be contracted through Selection Based on Consultants' Qualification (CQS). The following additional methods may be used where appropriate: Quality-Based Selection (QBS), Selection under a Fixed Budget (FBS), and Least-Cost Selection (LCS).

34. Short lists of consultants for services estimated to cost less than the equivalent of US$300,000 per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines. However, if foreign firms express interest, they will not be excluded from consideration.

35. Single-Source Selection (SSS) may be employed with prior approval of the World Bank and will be in accordance with paragraphs 3.8 to 3.11 of the Consultant Guidelines. All services of Individual Consultants (ICs) will be procured under contracts in accordance with the provisions of paragraphs 5.1 to 5.6 of the Consultant Guidelines.

36. **Operating costs.** Operating costs shall consist of O&M costs for vehicles, office supplies, communication charges, utility charges, travel expenses, per diem and travels costs, office rental,

training costs, workshops and seminars and associated costs, among others. Operating costs will not include salaries of civil servants.

37. **Training and workshops.** Training and workshops will be based on capacity needs assessment. Detailed training plans and workshops activities will be developed during project implementation and included in the project annual plan and budget for World Bank's review and approval.

38. **Procurement risk assessment.** Implementation of the project activities will be mainstreamed within existing government entities and structures. Procurement activities will be managed by the respective PMUs of the MOWI, DAWASA, and DAWASCO. The Wami-Ruvu Basin Water Authority may, subject to capacity assessment, be involved in the procurement of contracts for implementation of activities decentralized to the basin. Each entity will have the primary responsibility for the implementation of procurement activities for their respective subprojects.

39. A capacity assessment of the agencies to implement project procurement activities was carried out in April and May 2016. The assessment reviewed the organizational structure, functions, staff skills and experiences, adequacy for implementing the project, and the interaction between the project staff responsible for procurement and the relevant government agencies. The assessment revealed (a) inadequate space for offices and for storage of procurement records; (b) inadequate staff in DAWASA and DAWASCO for managing the procurement activities under the project; (c) lack of training for some staff in procurement under World Bank procedures and in contract management; (d) lack of modern equipment to support procurement operations; and (e) a lack of clear procedures and guidelines spelt out in manuals to provide guidance in the procurement processes.

40. The mitigation measures proposed include (a) provision of more space for staff offices and storage of records; (b) recruitment of procurement staff in DAWASA and DAWASCO; (c) training of procurement staff in procurement under World Bank procedures and in contract management; (d) provision of modern equipment to support procurement operations; and (e) preparation of a Procurement Manual to provide guidance in the procurement processes. The overall unmitigated project risk for procurement is Substantial.

Table 3.2. Procurement Risk Mitigation Measures

S/N	Action	Timeframe	Responsibility
1	Refurbishment of available space for provision of more offices and space for storage of records	By December 31, 2017	MOWI, DAWASA, and DAWASCO
2	Recruitment of additional procurement staff	By December 31, 2017	DAWASA and DAWASCO
3	Training of staff in procurement under World Bank procedures and contract management	During project implementation	MOWI, DAWASA, and DAWASCO
4	Provision of heavy duty printers, photocopiers, and scanners	By September 30, 2017	MOWI, DAWASA, and DAWASCO
5	Preparation of Procurement Manual to provide guidance in processing of contracts	By September 30, 2017	DAWASCO

41. In addition to the above mitigation measures, it is planned to implement further measures for the strengthening of the PMUs of the ministry and DAWASA so as to make them modal agencies with regard to procurement. These measures will facilitate having a system for tracking of procurement processes as well as for ensuring proper storage of procurement records for the agencies. It is expected that after implementation of the measures, the expected residual risk for procurement will be Low.

42. **Prior-review thresholds**. The Procurement Plan shall set forth those contracts which shall be subject to the World Bank's prior review. All other contracts shall be subject to post review by the World Bank. A summary of prior-review and procurement method thresholds for the project are indicated in table 3.3. All terms of reference for consultants' services, regardless of contract value, shall also be subject to the World Bank's prior review.

Table 3.3. Thresholds for Procurement Methods

Expenditure Category	Contract Value Threshold (US$)	Procurement/Selection Method	Contracts Subject to Prior Review
Works	≥ 15,000,000	ICB	All
	< 15,000,000 ≥ 10,000,000	NCB	All
	< 10,000,000	NCB	None (post review)
	< 200,000	Shopping	None (post review)
Goods	≥ 3,000,000	ICB	All
	< 3,000,000 ≥ 1,000,000	NCB	All
	< 1,000,000	NCB	None (post review)
	< 100,000	Shopping	None (post review)
Consulting Services – Firms*	≥ 500,000	QCBS/Other** (QBS/FBS/LCS)	All
	< 500,000 ≥ 300,000	QCBS/Other** (QCBS/QBS/FBS/LCS)	None (post review)
	< 300,000	CQS/Other** (QCBS/QBS/FBS/LCS)	None (post review)
Consulting Services - Individuals (IC)	≥ 300,000	IC - Qualification	All
	< 300,000	IC - Qualification	None (post review)

Note:

General - Terms of Reference for all contracts shall be cleared by the World Bank

(a) Shortlist for consultancy services for contracts estimated to be less than US$300,000 equivalent per contract may be composed entirely of national consultants in accordance with the provision of paragraph 2.7 of the Consultant Guidelines.

(b) Consultancy service for contracts estimated to cost US$300,000 and above equivalent per contract shall be advertised in United Nations Development Business online and dgMarket in addition to advertising in national newspapers in accordance with the provisions of paragraph 2.5 of the Consultants Guidelines

*QBS, FBS, and LCS for the assignment meeting requirements of paragraphs 3.2, 3.5 and 3.6 respectively of the consultant Guidelines.

43. **Record keeping.** The implementing entities will be responsible for record keeping and filing of procurement records for ease of retrieval of procurement information. In this respect, each contract shall have its own file and should contain all documents on the procurement process.

44. **Monitoring.** M&E of procurement performance will be carried out through World Bank supervision and post procurement review missions.

45. **Procurement Plan.** The Borrower has developed a Procurement Plan for the first 18 months of the project implementation which provides the basis for the procurement methods. This plan was agreed between the Borrower and the World Bank during negotiations. It will also be available in the project's database and on the World Bank's external website. The Procurement Plan will be updated in

agreement with the project team annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

46. **Frequency of procurement supervision.** In addition to the prior review supervision to be carried out from the World Bank offices, the capacity assessment of the implementing entities recommends one supervision mission every six months to visit the field to carry out post review of procurement actions.

Environmental and Social (including safeguards)

47. Other safeguards information is presented in the main text of this Project Appraisal Document; therefore, this section presents a detailed description of the implementing entities' capacity for safeguards implementation.

48. Due to the World Bank's engagement in the sector over many years, including WSSP-I, the client has considerable experience with World Bank safeguard policies, including trainings and other activities. Two of the three main implementing entities (DAWASA and MOWI) already have experience and capacity with World Bank safeguard policies from WSSP-I. The MOWI has an Environmental Safeguards Management Unit which oversees both environmental and social safeguards management and, accordingly, includes two environmental specialists and a social specialist, and expects to hire another three staff (one social and two environmental). This unit has also been supported over the past year by an international safeguards advisor consultant who has assisted in speeding up the delivery of multiple capacity building and strengthening activities and safeguards management tools.

49. DAWASA already has four compliance staff in the Compliance Unit, most with environmental qualifications and/or backgrounds that also oversee implementation of social safeguard activities along with a community liaison officer. DAWASA is advised to hire a social specialist to increase its capacity on social safeguards. The World Bank will review the terms of reference for the new staff to ensure that they possess the required education and experience needed to increase capacity. The recommended social staff will be working as the social focal points in DAWASA and DAWASCO and will liaise with the safeguards unit of the MOWI.

50. Given that DAWASCO will be taking on a new role in implementing the expansion and rehabilitation of transmission and distribution networks and has little previous experience with any safeguards management, there is a need for capacity building to implement safeguards activities under WSSP-II. To that end, DAWASCO will hire an environmental specialist and a social specialist to support WSSP-II.

51. The MOWI Environmental Safeguards Management Unit has been developing a series of trainings workshops to build the capacity of the IAs. Each IA has appointed a safeguards coordinator in the final quarter of 2015 who is to be fully engaged in safeguards activities to strengthen capacity for environmental and social management.

52. The MOWI has a Safeguards Strengthening Plan and has developed Guidelines for Good Environmental and Social Practice. The Safeguards Strengthening Plan which includes training, an environmental and social management information system, inclusion of environmental and social procedures in the PIM and other activities, was developed to increase the capacity of the unit and the safeguard coordinators of the IAs. The Environmental and Social Practice has been developed to improve the capacity of the IAs to monitor and oversee the environmental and socially related activities of contractors for rural WSS projects. This instrument was approved by the MOWI and training is being

organized on the use and application of the guidelines in some regions, with the participation of the IAs and contractors.

Monitoring and Evaluation

53. All agencies involved in implementation of the project will participate in the process of data collection, compilation, analysis, and use. But the MOWI planning and policy department will be responsible for collating and presenting this information in results monitoring/implementation progress reports to be prepared regularly by each of the directorates involved in implementation, and by DAWASA and DAWASCO. Formats for such reports will be aligned with those used for the SWAp to ensure that each IA will also use these regular M&E reports for internal and broader sector reporting as part of the regular reports prepared within the sector dialogue framework.

54. The baselines for results monitoring in DAWASA and DAWASCO will be established and progress will be monitored on an annual basis. But for specific investments under the water resources component, baselines will be determined on a rolling basis, as and when the specific investments to be supported by the project are known. The exact nature and number of investments carried out under the project will only be known once catchment action plans are prepared in participating basins/sub-basins and feasibility studies are prepared.

55. As an integral part of Component 3, an M&E program will be undertaken to assess and learn from the evidence generated through the implementation of the critical components of the project. Depending upon the context, this will involve carefully designed evaluation studies as well as more rigorous and systematic impact evaluations.

56. In the Subcomponents 1.1 and 1.2 of the water resources component, a systematic assessment of the impact of the water quality information system and WRM system on water quality improvement, water resource planning in the wake of competing demands, and overall improvement in service delivery will be examined.

57. As part of Components 2 and 3, a range of WSS interventions to meet the needs of currently unserved populations in Dar es Salaam will be implemented. These WSS interventions are expected to have significant health and human development impacts on the population in the city particularly on the poor, women, and children. In particular, improvement in sanitation has positive externalities on the community as a whole which will go well beyond individual benefits. Some of these impacts include regular and predictable access to WSS services, time savings that can be put to more productive uses, reduction in disease burden, particularly because of reduction in cholera and diarrhea incidence, and improved education outcomes for children, especially for girls. To assess the impacts of these interventions in a rigorous manner, appropriate counterfactuals (controls) that will depict the situation had the interventions not been undertaken need to be established using experimental or quasi-experimental techniques. Assuming phased implementation of the various interventions, a mix of randomized placement and matching techniques will be used for identifying the controls. A baseline survey will be carried out in both the treatment and control units before the intervention and an end-line survey will be carried out after the implementation is complete and after allowing for sufficient time for the effects to be visible. Apart from the geographical location of households, both the baseline and end-line surveys will capture information on household demographics, access and quality of services, and other health and human development outcomes of interest. The impact of the interventions will be

the differences in outcomes between the treatment and controls, measured through the baseline and end-line surveys.

Role of Partners

58. The water resources subsector in Tanzania is supported by a number of financiers and bilateral partners. Coordination of this support is through the technical working group under the umbrella of the WSDP. The project and this component directly respond to the request from the Government and has been discussed in detail with development partners, in particular GIZ and DFID, which have substantive parallel support to the sector. Objectives are aligned and a division of labor is being agreed, with GIZ providing much of the TA at central and basin levels, and IDA and DFID financing investments at national and specific basin levels, and all supporting a multisectoral approach.

Annex 4: Implementation Support Plan

TANZANIA: Second Water Sector Support Project

Strategy and Approach for Implementation Support

1. Project implementation involves institutional reform and development which by its nature is process-oriented. The implementation support plan will take this into consideration and include intensive support to implementing entities in the first 18 to 24 months while at the same time support will be provided in the areas on investment project monitoring.

2. In the IWRM component, the focus in the first two years will be to support the establishment of the Water Resource Center of Excellence, the multisectoral coordination mechanism, and the development of water resources database.

3. Under the Dar es Salaam components of the project, the implementation support in the first two years will mainly focus on the completion of the transitional arrangements of the reform and further refining the performance indicators based on the lessons from the transitional period.

4. The extent of the operational efficiency improvement work requires engagement of an experienced expert, particularly for the development and implementation of the NRW reduction and management strategy, including consideration of partnership with the private sector.

5. A public-private partnership option study will be conducted during project preparation and its recommendation will be discussed and the preferred option will be introduced during implementation.

Implementation Support

Time	*Focus*	*Skills Needed*	*Resource Estimate*	*Partner Role*
First twelve months	Support to the transitional arrangement of the reform in Dar es Salaam; Support to the establishment of the Water Resource Center of Excellence and coordination mechanism for IWRM; Support to refinement and implementation of the NRW improvement plan in DAWASCO and DAWASA; Support to the definition of roles and responsibilities for sanitation in Dar es Salaam;	WSS specialist; Utility reform specialist; Legal specialist with experience in utility contracts; WRM specialist with experience in WRM institutional arrangement; NRW specialist; Urban sanitation specialist with experience in decentralized sanitation/sewerage services and institutional arrangement; Procurement, FM, and safeguards	US$250,000 Two full implementation review missions of 10 days each and interim missions by country office based staff.	DFID: Complementary TA financing for Center of Excellence establishment; Join implementation review and supervision missions; Support national level stakeholder coordination. GIZ: continues providing TA to the MOWI and BWBs with focus on monitoring and evaluation and capacity building.

	Support to preparation of bidding documents, procurement, FM, safeguards and contract management, and training.	specialists		2030 Water Resources Group: Facilitates stakeholder forums at national and basin levels.
12–48 months	Support to procurement, FM, safeguards and contract management; Support to operational efficiency improvement	Procurement, FM, safeguards specialists; WSS specialist; Utility financing specialist	US$1,200,000 Two regular full implementation support and review mission; mid-term review; and interim missions.	
Other	Financial and economic analysis	Economist		

Skills Mix Required

Skills Needed	***Staff Weeks per Year***	***Trips per Year***	***Comments***
Team leader	35	2	Dar es Salaam country office based
Water resources specialist	35	2	Washington, DC based
Utility contract specialist	2	As required	
Urban sanitation Specialist	35	2	
Utility institutional specialist	6	2	Washington, DC based
Environmental specialist	15	2	Dar es Salaam country office based
Social specialist	15	2	Dar es Salaam country office based
Procurement specialist	8	2	Dar es Salaam country office based
FM specialist	4	2	Dar es Salaam country office based
Financial analyst/economist	6	1	Washington, DC based
Team assistant	4	As required	Washington, DC based
Team assistant	4	—	Dar es Salaam country office based

Partners

Name	***Institution/Country***	***Role***
DFID	United Kingdom	Coordination in WRM
GIZ	Germany	Capacity building for IWRM

Annex 5: Gender and Citizen Engagement

TANZANIA: Second Water Sector Support Project

1. The national water policy of 2002 states that gender implications shall be examined and taken into account at all stages of management of water resources. The National Water Sector Development Strategy (2006) promotes gender inclusion in the water sector, and specifically emphasizes effective participation of both women and men in the provision of water supply, sewerage, and sanitation services. Similarly, the National Sanitation and Hygiene policy acknowledges that women and children suffer the most because of the additional challenges of limited privacy for defecation, increased burden of looking after the sick, or children being more vulnerable to disease. Sanitary facilities in schools, offices, and other institutions are also constructed without considering disabled people or other people with limited mobility such as the elderly or pregnant women, or other vulnerable groups. To promote gender equality in the WSDP-II programs, the following will be undertaken:

- A fair representation of women in village water-user entities will be encouraged.
- Consultations on water allocations with user associations and in rural water supply programs, to ensure that plans are based on what both men and women in rural communities know, want, and are able to manage, maintain, and pay for.
- Awareness raising, training, and empowering women to actively participate at all levels in water programs, including decision making, planning, supervision, and management in both the WRM and water supply components of the project.

2. Table 5.1 elaborates these objectives against the various project components.

Table 5.1. Summary of Gender Actions

Action	Monitoring Indicator	Responsibility
Support to Component 1 - Subcomponent 1.1: Strengthening WRM Institutions		
Conduct 3D modeling to incorporate gender dimensions in WRM hydrological design. Separate consultations and groupings of WUAs by sex and indigenous groups to enable more equitable allocations across competing water constituencies, and improve the quality of water management plans and processes.	• Monitor outputs of stakeholder outreach where women's views, alongside those of men, are well featured and prioritized	MOWI
Subcomponent 1.2: Improved WRM Information - Hydromet Services		
Analyze effectiveness of flooding and disaster response communications on women and men through participatory exercises Prepare gender risk profiles or assessments for flood-prone areas and design gender-sensitive water disaster reduction communication strategies	• Percentage of population protected from floods (disaggregated by male and female, poor and nonpoor) • Number of women who have benefited on par with men from flood prevention activities • Channels identified and mechanisms in place to reach women and men in times of catastrophe • Number of women and men included in community facilitator teams for flood	MOWI

Action	Monitoring Indicator	Responsibility
	response • Number of gender-sensitive flood response plans adopted	
Subcomponent 2.2: Performance-Based NRW Reduction in Dar es Salaam		
DAWASCO and DAWASA to demonstrate implementation of components of the water sector gender strategy	• Number of women in sector oversight committees • Number of women and men engaged in economic opportunities generated by WSDP-II	EWURA, DAWASA, Ministry of Health, Department of Environment

Annex 6: Economic and Financial Analysis

TANZANIA: Second Water Sector Support Project

1. This economic and financial analysis assesses the economic and financial benefits and related costs arising from the activities implemented under Component 2: Dar es Salaam Water Supply Improvement and Component 3: Dar es Salaam Sanitation Improvement as indicated in table 6.1. This analysis comprises two parts: (a) economic analysis, and (b) financial analysis.

Table 6.1. Component 2: Dar es Salaam Water Supply Improvement and Component 3: Dar es Salaam Sanitation Improvement

Subcomponent	Detailed Description	Project Allocation (in US$, millions)
2.3 Institutional Restructuring/Reform and Utility Modernization	• Technical assistance support for the strengthening of DAWASCO and DAWASA	10
2.1. Expansion of Water Supply Distribution in Unserved Priority Areas 3. Dar es Salaam Sanitation Improvement	**Water** • Rehabilitation and expansion of water supply distribution systems including primary and secondary mains; household connections; stand posts and kiosks • Off-grid investment in water supply systems in unserved priority areas **Sanitation** • WWT plan at Mbezi and associated trunk sewer and network • Off-grid sanitation, including decentralized fecal sludge transportation and treatment facilities, and condominial/simplified sewerage with DEWATS	136
2.2. Performance-Based NRW Reduction in Dar es Salaam	**Water** • Performance-based NRW contract in a specific area of Dar es Salaam to improve service and reduce physical losses	20
Total		166

2. The results of the economic and financial analysis show that the Second Water Sector Support Project (P150361) is economically and financially viable with returns of US$180 million and US$329 million, respectively when a 10 percent rate of discount is used. The FIRR is 19.7 percent and the EIRR is 28.6 percent. These analyses are presented in detail in this annex and complemented with sensitivity analysis.

3. The cost-benefit analysis carried out for Components 2 and 3 was undertaken from economic and financial perspectives. From an economic perspective, it was evaluated converting financial cash flows into economic cash flows to eliminate distortions caused by taxes, subsidies, and other externalities. From a financial perspective, it was evaluated by estimating costs and benefits at market prices, in the same way DAWASCO will be paying or receiving from each input.

Methodology and Assumptions

4. This economic and financial analysis evaluates the economic impact of improvements in water supply access in the Dar es Salaam area, Tanzania. The cost-benefit analysis estimates the economic/financial feasibility of the project by calculating the NPV of cost and benefit streams and by determining the EIRR/FIRR of the project.

5. **Cost-benefit analysis**. The economic/financial feasibility analysis of the project compares estimated economic benefits of the project with its economic/financial costs. As the project costs are given, the primary analytical challenge of this analysis is to most accurately estimate the expected benefits that occurred or are likely to occur as a result of project implementation.

6. **With and without scenarios.** The net benefit of the project was estimated as the incremental benefit of two scenarios: with and without project situations. The with project situation included the proposed investment program under Components 2 and 3 (table 6.1). The without project situation assumed that the proposed investments under Components 2 and 3 do not take place and therefore the proposed expansion in the number of connections will not be undertaken.

7. **Time horizon and discount rate.** Components 2 and 3 were appraised measuring the expected costs and benefits for the project's lifetime, estimated at 40 years for the major investments included under Components 2 and 3 and 10 years for investments made under the NRW component. It is assumed that household connections have a 40-year life, stand posts 20 years (WHO 2004). Benefits and costs were expressed in constant prices of January 2016. The discount rate corresponded to Tanzania's opportunity cost of capital, estimated at 10 percent (for the base case scenario), used in similar projects.

8. **Challenges.** The primary analytical challenge of this evaluation is to estimate the expected benefits that will likely occur in the future as a result of project implementation. The expected benefits of the project are assumed to be the amount of economic/financial costs that will likely be avoided as a result of the project implementation. Calculation of these benefits involves (a) examination of statistical and economic data of past costs arising from water-related illnesses; (b) estimation of the likely frequency and severity of potential future occurrence of diarrhea incidence in the targeted population; (c) estimation of future economic costs of these incidences; (d) estimation of the share of these costs that can be avoided as a direct consequence of project implementation; and (e) estimation of the time savings because of reductions of time fetching water because of a new connection and/or because of longer hours of water supply.

9. **Data sources.** This analysis uses various data sources to estimate the costs and benefits derived from the implementation of the investments detailed in table 6.1. An effort was made to have local data for all assumptions used in the analysis. Gaps are filled with regional or global data. Data sources include the following:

Tanzania Demographic and Health Survey, 2010

Tanzania Population Census, 2012

National Bureau of Statistics. 2014. *Tanzania Integrated Labor Force Survey: Analytical Report*.

Tanzania Morbidity and Mortality Statistics by Region, http://opendata.go.tz/

EWURA. Tariff adjustment Order, 2015

EGISBCEOM International. 2011. *Baseline Study and Preparation of Technical Specification for a Performance-Based Contract for Non-Revenue Water in Dar es Salaam*. Final Version

DAWASCO. 2014. "NRW Assessment and Development of a NRW Management Strategy." Final Report.

DAWASCO. Utility Key Results Area 2015–16

DAWASCO. 2015. Operational Performance Data, 2015

DAWASCO/NORPLAN. 2008. "Development of a Strategic Water Supply Plan for Dar es Salaam."

DAWASCO/NORPLAN. 2008. "Preparation of a Sanitation Improvement Plan for Dar es Salaam."

WHO (World Health Organization). 2004. *Evaluation of the Costs and Benefits of Water and Sanitation Improvements at the Global Level. Water, Sanitation and Health Protection of the Human Environment*. Geneva: WHO

WHO. 2008. *Safer Water, Better Health: Costs, Benefits and Sustainability of Interventions to Protect and Promote Health*. Geneva: WHO

WHO. Cholera Country Profile, 2008

WHO. 2011. *Tanzania Country Profile of Environmental Burden of Disease*. Geneva: WHO

WHO. 2012a. Choice for Service Delivery. 2012

WHO. 2012b. Global Health Observatory Data Repository, Burden of Disease: Inadequate Water, Sanitation and Hygiene in Low- And Middle-Income Countries.

Economic Analysis

10. This economic analysis concludes that the EIRR of Components 2 and 3 is at least 28.6 percent, based on rather conservative assumptions. This estimate excludes many socioeconomic dimensions of the project benefits that are difficult to quantify in monetary terms because of their nature or for which there is not data available. This EIRR exceeds an assumed opportunity cost of capital of 10 percent, cost that is expected for this kind of project and therefore the project's investments can be considered sound. The NPV of the net benefit stream over the project's time horizon is about US$180 million, assuming a discount rate of 10 percent.

Benefits Considered

11. The economic benefits estimated by this economic analysis relate to improvements in water distribution systems and decreases in NRW. The rehabilitation and expansion of water supply distribution and sewerage/sanitation systems will have a positive impact on the incidence of waterborne-related diseases (direct and indirect), will reduce the time of collecting water by project beneficiaries, and will increase the global water demand. The NRW investments will lead to a greater amount of water billed and collected and costs savings associated with the production and treatment of water that otherwise will be lost. For the purposes of this economic analysis, the benefits included in table 6.2 were estimated.

Table 6.2. Estimated Economic Benefits

Beneficiary	Direct Health Benefits	Indirect Health Benefits	Nonhealth Benefits
Health providers	• Less expenditure on treatment of diarrheal	—	—

	disease due to water and sanitation improvements		
Patients	• Less expenditure on treatment of diarrhea disease and less related costs because of water and sanitation improvements • Less expenditure on transport in seeking treatment	• Opportunity cost of school absenteeism among school age population because of water and sanitation improvements • Value of time loss of parent/caretaker of sick children avoided • Value of loss of death avoided	—
Customers	—	—	• Time savings related to water collection or accessing sanitation facilities
Service provider	—	—	• Additional water sales arising from increasing demand from existing and new water connections • Additional water sales arising from greater availability of water derived from NRW reductions

Direct Health Benefits

12. Access to safe water is a dominant factor in the reduction of waterborne and water-washed diseases. For the purposes of this economic analysis, the impact on the reduction of diarrhea incidence among the beneficiary population is taken into account; the impact of improved water on the incidence of other waterborne and water-washed diseases, such as trachoma and intestinal worms, is not quantified.

13. Tanzania has a high incidence of diarrhea diagnosis. There are cholera cases every year and an epidemic every three years, with more than 10,000 cholera cases per year.[17]. In Dar es Salaam, 86,537 diarrhea-related diagnosis were reported in 2014 (table 6.3) and about 14,174 deaths in Tanzania were because of diarrhea in children under age five in 2012 (WHO 2012b). Diarrhea affects about 13 percent of the population under five years and about 2 percent of the population above five years.

Table 6.3. Diarrhea Diagnosis and Deaths for Dar es Salaam

Type of Diagnosis	0–4 years	> 5 years	Total
Inpatient diagnosis	1,908	2,022	1,908
Outpatient diagnosis	84,629	62,235	84,629
Total*	86,537	64,257	86,537

Source: Open Data Tanzania, 2016.
Note: *. Data for 2014.

[17] WHO, Cholera Country Profile, 2008.

14. In the case of new and rehabilitated piped water connections, the main benefits considered (or costs avoided) are related to the health care and non-health care costs avoided because of fewer cases of diarrhea. Based on global estimates calculated by WHO, the project is expected to significantly reduce the incidence of diarrhea in Dar es Salaam by 5 percent[18] per year based on global WHO estimates for this kind of intervention (WHO 2004).

15. **Avoided direct health sector expenditures because of decrease in diarrhea incidence**. The health-related cost of a diarrhea case is calculated based on the cost of treatment per case, which can be outpatient or inpatient. Based on Dar es Salaam data on diarrhea incidence, it is estimated that around 98 percent of the cases are outpatient and the remaining 2 percent require hospitalization (Open Data Tanzania 2014), with an average duration of stay of about five days (ranges between 3 and 7; WHO 2004).

16. **Avoided direct patients' expenditures because of decrease in diarrhea incidence**. These costs are mainly incurred by patients who require some level of health care (either ambulatory or hospitalized) such as transport costs, food costs, and other costs. Regardless of being an outpatient or inpatient, for this analysis it is assumed that a patient spends about TSh 3,000 in transport costs per round trip. Food and drinks were assumed to be TSh 4,000 per day per inpatient admission. For outpatient patients, the estimated costs of treatment were assumed at TSh 6,000 per case, whereas for inpatient diagnosis the costs of medicines are included in the cost for the health center of treating this kind of patient (hence included in the health sector expenditures). As a result, for each case avoided per year, patients are expected to save between US$11 (outpatient) and US$33 (inpatient) of expenditures related to diarrhea.

Indirect Economic Benefits Related to Health Improvements

17. For the purposes of this economic analysis, gains related to lower morbidity and lower mortality associated with lower diarrhea incidence among the Project's beneficiaries were considered. Benefits from lower morbidity are related to child illness-related absenteeism among caretakers of children population and working population absenteeism among the project beneficiaries.

18. **Opportunity cost of school absenteeism among school-age population.** This benefit takes into account the opportunity cost of not attending school under the assumption that children of school age (5 to 18 years) attend school. The impact of a diarrhea case in this population is valued on the basis of the minimum wage, assuming that the number of absent days from school per episode of sickness is three for outpatient cases and five for inpatient cases (WHO 2004).

19. **Income gained as a result of decrease in illness-related absenteeism in working age population.** This benefit is the amount in monetary units that an ill person would earn over the period of time that person was sick, if the person was working. For working age beneficiaries (15 to 60 years), it was assumed that one day loss of work is lost per episode of diarrhea in case of outpatient diagnosis (because of the need of at least two outpatients visits) and five days in case of inpatient diagnosis as this is the length of time an inpatient case is expected to last (WHO 2004).

[18] If, for example, it is assumed instead that a higher number of current diarrhea cases are avoided, then the cost savings would correspondingly be significantly higher. Notice that this is the estimated reduction for Dar es Salam, that is, the project beneficiaries among whom the diarrhea incidence is expected to be reduced by a higher proportion.

20. In Tanzania, there is a significant gap between formal employment and self-employment wages. For this economic analysis, the average monthly wage of about TSh 215,000 for self-employment (National Bureau of Statistics 2014) was taken as a minimum value for what a person's time is worth. The average monthly wage for paid employment is TSh 308,000.

21. **Income gained as a result of decrease in child illness-related absenteeism among caretakers of children population** (children 0–59 months). For children under age five, the assumption is made that a parent or caretaker has to spend time to take care of the sick child or alternative childcare arrangements are needed. Similar to the above benefit, it is assumed that a caretaker needs to dedicate one day per episode of diarrhea in case of outpatient diagnosis (because of the need to take the child at least twice to outpatients visits) and 2.5 days in case of inpatient diagnosis as this is the length of time the caretaker is expected to dedicate to take care of the inpatient child.

22. **Value of loss-of-life avoided**. The measurement of burden of Water, Sanitation, and Hygiene-related diseases relies on the concept of the disability-adjusted life year (DALY). The DALY[19] is a measure of overall disease burden, expressed as the number of years lost because of ill-health, disability, or early death. WHO estimates that 863 DALYs are lost per 1,000 among the population under age five per year because of the lack of adequate WSS services in Tanzania (WHO 2012). When combined with average wage for self-employment (TSh 215,000), this estimate results in the value of total avoided DALYs per year in the target population.

Nonhealth Benefits for Customers Associated with Water Supply Improvements

23. **Time savings.** One of the major benefits of water supply improvements are time savings associated with access to water supply using household connections and stand posts, compared with other alternative nonimproved sources of water. Similarly, access to an on-site sanitation facility leads to time savings. These time savings translate into either increased production, improved education levels, or more leisure time. The value of convenience time savings is estimated by assuming a daily time saving per individual by obtaining water from a household connection rather than from alternative nonimproved water sources. The average daily water collection time for a 20-liter jerry can in urban Tanzania is estimated to be 20 minutes (round-trip) for those users that rely on kiosks and boreholes. Hence, per year a person spends about eight days collecting water to guarantee a personal consumption of 30 liters per day (below the minimum per capita consumption of 40 liters per day). Time savings are equivalent to about TSh 77,500 per year of potential wages forgone based on the wage for self-employment in Tanzania. To estimate the benefits arising from time saving, beneficiaries from household connections are assumed to spend no time collecting water and those benefiting from stand posts are assumed to spend half of the time than without the project as the water source is closer to their homes. For simplification, time savings for all age categories are valued at the minimum wage.

Nonhealth Benefits for the Utility Associated with Water Supply Improvements and NRW Program

24. **Additional water sales arising from increasing demand from existing and new connections**. Because of the rehabilitation and extension of distribution mains, compounded with the additional water production, it is expected that existing household connections increase their water consumption (incremental demand) by at least 10 percent. Thus, existing household connections with the project will consume an average of 97 liters per person per day compared with the current average consumption of

[19] DALY (which measures the years of life lost to premature mortality and the years lost to disability).

86 liters per person per day (DAWASCO 2015). New household connections are expected to have an average consumption of 97 liters per person per day. Average daily consumption per capita from stand posts is estimated at 25 liters (DAWASCO/NORPLAN 2008). Hence, the incremental demand from existing water connections and the new demand from household connections and stand posts are expected to generate additional sales for DAWASCO. The estimated demand has been calculated assuming that the project will support the installation of 100,000 new household connections, the rehabilitation of 25,000 household connections, and the installation of 265 stand posts and kiosks (table 6.4). For the purposes of the estimation, it is assumed that 100 percent of these new sales are billed and 90 percent are collected.

25. New water sales are valued at the current water tariff of TSh 1,663 per m^3, which includes the remuneration for DAWASA (TSh 496 per m^3) and DAWASCO (TSh 1,106 per m^3) and the first time water connection (FTWC) allowance (TSh 61 per m^3). No tariff adjustments were considered.

Table 6.4. Connections to be Installed and Rehabilitated under the Project

Type of Connection	Y1	Y2	Y3	Y4	Y5	Total
Household connections (per year)	0	23,000	32,000	40,000	30,000	125,000
of which rehabilitated	0	3,000	7,000	10,000	5,000	25,000
of which new	0	20,000	25,000	30,000	25,000	100,000
Stand posts and kiosks (per year)	40	50	65	60	50	265

26. **Additional water sales arising from greater availability of water derived from NRW reductions.** Because of the NRW program to be implemented under the project, it is expected that the total water losses decrease in the selected DMA. The baseline is a rather conservative level of existing NRW (about 54 percent), of which 35 percent are commercial losses and 65 percent are physical losses. The NRW program is expected to contribute to reduce the commercial and physical losses so that the NRW levels decrease to 30 percent in year 5 and continue decreasing at a rate of 1 percentage point per year.

27. If no loss reduction program is implemented, given the poor condition of the Dar es Salaam system it is forecasted that NRW will continue to increase. Under a conservative scenario, NRW increase is assumed at 1 percent per year if no measures are taken to reduce water losses. Some estimates forecast that NRW will be at more than 70 percent of water production, if no measures are taken, given the increasing water production that is expected once the new water production facilities come online.

28. The economic analysis assumes that capital investments are implemented between year 1 and year 5, and that routine maintenance of the network is performed—as part of the NRW program—thereafter until year 10. Hence, the benefits from the NRW program are expected to be seen for 10 years. As such, the economic analysis takes into account the additional water sales generated by the NRW program between year 1 and year 10.

29. For the purposes of the economic analysis, only physical losses are considered, as reductions in commercial losses do not represent an economic benefit but rather only a financial benefit for DAWASCO. Thus, the estimation of the additional water sales is based on the estimated reductions of physical losses and assuming that 100 percent of the water saved is billed and 95 percent of it collected. Additional water sales are valued at the current water tariff.

30. **Summary of economic benefits.** Table 6.5 summarizes annual values of the above project benefits and their present values, using a 10 percent discount rate. A key assumption to calculate the present value of the future benefits is the project schedule of installing and rehabilitation connections (Table 6.5). Based on this, the present value of the project economic benefits was estimated at US$560 million.

Table 6.5. Present Value of Economic Benefits

Beneficiary	Type of Benefit	Benefit	NPV (US$, millions)
Health providers	Direct health benefits	Less expenditure on treatment of diarrheal disease	0.3
Patients	Direct health benefits	Less expenditure on treatment of diarrhea disease and less related costs	153
	Direct health benefits	Less expenditure on transport in seeking treatment	
	Indirect health benefits	Opportunity cost of school absenteeism among school-age population	
	Indirect health benefits	Value of avoided time loss of parent/caretaker of sick children	
	Indirect health benefits	Value of loss of death avoided	
Customers	Nonhealth benefits	Time savings related to water collection or accessing sanitary facilities	130
Service provider	Nonhealth benefits	Additional water sales arising from increasing demand from existing and new water connections	211
	Nonhealth benefits	Additional water sales arising from greater availability of water derived from NRW reductions	65
Total			560

Other Benefits

31. Besides direct preventable economic losses, there are many other potential benefits that are not factored into the cost-benefit analysis described here. This is either because estimating such benefits is difficult because of the lack of data or it is challenging to quantify the value of those benefits because they might not be financial or economic in nature; for instance, improved water supply provides comfort and dignity. Some of the benefits excluded from the economic analysis are referred below.

32. **Impact on women and girls.** A key impact of the project is the reduction of the time spent by families on long distance water collection. Water collection is generally the responsibility of women and young girls: the project will free time for them to engage in productive or educational activities generating substantial additional wealth and increasing the likelihood of girls receiving formal education. The project will also create opportunities for women to participate in the WCs and other CBOs and thus contribute to a fairer gender balance in the management of water services.

33. **Decrease in morbidity and mortality rates not associated with diarrhea incidence.** The economic benefits considered in this economic analysis are limited to the impact of improved water and sanitation services on both morbidity and mortality associated with diarrhea; as such, the economic benefits focused on the benefits from illness cost avoided (and time savings), and diarrhea-related deaths prevented. These benefits are unlikely to reveal the full morbidity and mortality benefits of water

and sanitation infrastructure investments. Extensive literature suggests that the effects of improved water and sanitation on child mortality go beyond their direct diarrheal effect. By lowering the exposure to fecally transmitted diseases, access to improved water and sanitation does not only lower diarrhea incidence but also considerably lowers the risk of malnutrition as well as the risk of severe infection with other (not fecally transmitted) diseases, enhancing the chances of survival for protected children.[20] Depending on the type of intervention, 10 to 27 lives per 1,000 births could be saved among the under five-year population because of investments in WSS. The full morbidity and mortality benefits are not estimated as part of this economic analysis.

34. Therefore, the estimated benefits of the project described in this analysis can be considered conservative and it can be reasonably assumed that the actual benefits will be larger than the ones estimated by this economic analysis.

Costs

35. The proposed activities to be undertaken under Components 2 and 3 included in table 6.1 are estimated at US$166 million, including activities to strengthen the institutional capacity of DAWASA and DAWASCO, investments in water supply distribution system rehabilitation and expansion, investments in WWT and sewerage, investments in WSS services in unserved priority areas, and operational expenses associated with the implementation of the global strategy for reduction of NRW in Dar es Salaam (US$20 million). Given that the economic benefits are directly associated with the implementation of these activities, the economic analysis takes into account their full costs of implementation.

36. In addition to the investment cost, expected operating and maintenance cost are estimated based on existing DAWASCO costs. The estimated production cost per cubic meter is TSh 144 and treatment cost (including energy and chemicals) is TSh 902 per m^3.

Sensitivity Analysis

37. A sensitivity analysis was carried out to measure the impact on the economic results when changes on the production and treatment costs and NRW reduction forecast occur, as well as the impact of using different discount rates. Given the benefits accounted for in this economic analysis, certain changes in the parameter do not compromise the economic viability of the project.

38. **Changes in production and treatment costs.** A 10 percent increase and decline in production and treatment cost were considered. The project remains economically viable under a 10 percent increase in these costs, as seen in table 6.6.

Table 6.6. Sensitivity Economic Analysis for Variations in Costs of Production and Treatment

Scenario	TSh per m^3	EIRR (%)	NPV (US$, millions)
Increase of 10%	1,130	26	188
Base scenario (existing costs)	1,046	29	181
Decrease of 10%	921	32	234

[20] Günther, Isabel, and Günther Fink. 2011. "The Impact and Cost of Water and Sanitation Infrastructure." Policy Research Working Paper 5618.

39. **Changes in NRW trends.** A 10 percent deviation (in both directions) from the NRW targets was evaluated. The project remains viable even if the utility does miss the NRW target by 10 percent, as seen in table 6.7.

Table 6.7. Sensitivity Economic Analysis for Variations in NRW Reductions

Scenario	EIRR (%)	NPV (US$, millions)
Achievement of an additional 20% on NRW targets	30	213
Base scenario	29	181
Missing NRW targets by 20%	26	160

40. **Changes in discount rates used**. The economic viability of the project was evaluated using 5 percent and 15 percent discount rates. Under a 15 percent discount rate, the project is still economically viable (table 6.8).

Table 6.8. Sensitivity Economic Analysis for Variations in Discount Rates

Discount Rate Applied	EIRR (%)	NPV (US$, millions)
5%	29	525
10%	29	181
15%	29	94

Financial Analysis

41. Results of the financial analysis show that the project is financially viable when the utility expands access to service and fully implements the NRW program. Under the set of assumptions considered,[21] the FIRR of the activities considered under the financial analysis is 19.7 percent and the NPV is US$329 million.

Financial Benefits

42. The benefits of the project were measured in financial terms as the increase of revenue for DAWASCO and DAWASA. Revenues were measured as volume of water billed times the average tariff per cubic meter, and then affected by the collection revenue rate of 90 percent (that is no increase in revenue collection was assumed). No tariff adjustments were assumed for the financial projections. The volume of water billed depends on the number of meters installed and used. The metered consumption was based on data of users effectively metered for billing purposes. For nonmetered customers, DAWASCO's estimated average consumption was used. The increase of revenues will come from:

- Incremental water consumption of existing connections because of the greater water availability and expected improvements in service quality (such as greater continuity and water pressure) (See more details under economic analysis, benefits considered 'Additional water sales arising from increasing demand from existing and new connections.)

[21] Most of the assumptions made to calculate the economic benefits and costs are kept for the financial analysis, unless otherwise stated.

- Additional water sales from connections installed by the project (household connections, stand posts, and kiosks). (See more details under economic analysis, benefits considered 'Additional water sales arising from increasing demand from existing and new connections.')

- Additional water sales arising from greater availability of water derived from NRW reductions in a selected DMA. The financial projections associated with the NRW program, including benefits and costs, were built for a 10-year period. In year 1, the existing level of NRW is 54 percent of water production. In year 10, it is assumed that NRW drops to 30 percent of water production, a level that is likely to be attained by DAWASCO if the NRW program is fully implemented but still higher compared to a recommended level of NRW of 20 percent. In the case of the economic analysis, not all water sales were taken into consideration as some of them are derived from reductions in commercial water losses (that is, water that is consumed but not paid for by the customers) and as such they do not represent an economic benefit of the project. But for the purposes of the financial analysis those reductions in commercial water losses, which translated in higher water sales, do represent a financial benefit for the utility that will have a stream of revenue that before used to be foregone because of illegal connections and the like.

43. **Summary of financial benefits.** Table 6.9 summarizes annual values of the above project financial benefits and their present values, using a 10 percent discount rate. A key assumption to calculate the present value of the future benefits is the project schedule of installing and rehabilitating connections (Table 6.4), the expected increases in water consumption from existing customers, and the expected evolution of the NRW if the NRW program is fully implemented. Based on this, the NPV of the project's financial benefits was estimated at US$329 million.

Table 6.9. Present Value of Financial Benefits

Benefit	NPV (US$, millions)
Incremental water consumption of existing connections	211
Additional water sales from connections installed by the project	
Additional water sales arising from greater availability of water derived from NRW reductions	118
Total	329

Costs

44. In contrast with the economic analysis, not all the proposed activities to be undertaken under Components 2 and 3 and associated costs were considered under the financial analysis. Table 6.1 includes activities to strengthen the institutional capacity of DAWASA and DAWASCO, investments in water supply distribution system rehabilitation and expansion, investments in WWT and sewerage, investments in WSS services in unserved priority areas, and operational expenses associated with the implementation of the global strategy for reduction of NRW in Dar es Salaam. The financial costs associated with Components 2 and 3 included in the above financial analysis are about US$110 million as the costs associated with investments in WWT and sewerage and investments in WSS services in unserved priority areas are separately assessed as part of DAWASCO financial viability analysis.

Sensitivity Analysis

45. A sensitivity analysis was carried out to measure the impact on the financial results when changes on NRW reductions occur. The variation could imply achieving additional improvements or, on the contrary, missing some of the assumed targets. Also, the financial impact of using different discount rates was evaluated. From the financial point of view, the project becomes financially unviable when there is a 10 percent increase in the costs of production and treatment and when a 15 percent discount rate is used.

46. **Changes in production and treatment costs.** A 20 percent increase and decline in production and treatment cost were considered. The project becomes financially unviable if there is a 10 percent increase in these costs, as seen in table 6.10.

Table 6.10. Sensitivity Financial Analysis for Variations in Costs of Production and Treatment

Scenario	TSh per m^3	FIRR (%)	NPV (US$, millions)
Increase of 20%	1256	5	−17
Base scenario (existing costs)	1046	20	30
Decrease of 20%	837	37	76

47. **Changes in NRW trends.** A 10 percent deviation (in both directions) from the NRW targets was evaluated. The project remains financially viable even if the utility does miss the NRW target by 10 percent, as seen in table 6.11.

Table 6.11. Sensitivity Financial Analysis for Variations in NRW Reduction

Scenario	FIRR (%)	NPV (US$, millions)
Achievement of an addition 20% on NRW targets	22	35
Base scenario	20	30
Missing NRW targets by 20%	18	25

48. **Changes in discount rates used.** The economic viability of the project was evaluated using 5 percent and 15 percent discount rates. The NPV of the project becomes negative when a 15 percent discount rate is used, compromising the financial viability of the project.

Table 6.12. Sensitivity Financial Analysis for Variations in Discount rRates

Discount Rate Applied	FIRR (%)	NPV (US$, millions)
5%	20	80
10%	20	30
15%	20	9

Financial Viability of DAWASCO

49. The financial analysis of DAWASCO was undertaken by reviewing the historic financial performance and making financial projections for the next 15 years with the help of financial models. The financial model was built on the data provided in the DAWASCO Annual Report (2014/15), Strategic Plan (2013/14–2015), Reviewed Budget (January 2015–June 2016), EWURA ORDER 015–017, and performance indicators and focused on the financial viability required for adequate O&M of the existing

and newly constructed assets and enabling the company to take over its responsibility as a retail operator. The financial analysis was done at the utility level taking into account not only investments financed by the project, but also all other WSS service expansion financed from other sources and all business-as-usual decisions.

50. As explained above, the most important objective of the financial analysis is to explore the effect of the WSS service extension on DAWASCO's financial situation and ensure that the utility can demonstrate financial sustainability in the planned rapid expansion of services.

51. Key assumptions to assess the financial situation of DAWASCO in the next 15 years are the following: (a) implementation of ongoing increase of water production with 464,000 m^3 per day gradually in the next five to six years; (b) NRW gradually decreases from 54 percent to 30 percent in the next 10 years and afterwards continue to be reduce at 1 percent per year; the water tariff used for the analysis is TSh 1.663 effective from December 2015 and no further tariff adjustments were assumed for the financial projections or inflation impact on DAWASCO expenditures; (c) DAWASCO will be responsible for depreciation and renewal of the 50 off-grid solution as they are depreciated, respectively; however, O&M is not part of DAWASCO expenditures as these facilities will require dissimilar approaches to community and households; (d) In 2018/2019, DAWASA, as a bulk supplier, will be responsible for ownership and operation of the WTPs and WWT facilities. DAWASCO as a retailer will own and operate all assets from the bulk water supply points. This is reflected in the analysis by removing most of the production cost from DAWASCO, but in the same time keeping the respective increase in depreciation allocation, as DAWASCO will be responsible for the assets renewal.

52. Table 6.13 shows the main results of the financial analysis. Similar to the previous years, DAWASCO will continue to operate at a loss for the next three years. In this period, the respective GoT subsidy should be considered. Because of planned rapid expansion in WSS services, the significant reduction expected in the NRW and the respective economy from scale, the company loss is gradually reduced and by 2019/2020, it is expected to gain profit. In addition, DAWASCO will be able to repay the principal for the portion of the investments made in the WSS system. DAWASCO's economy from scale and profitability is mainly dependent on service expansion and NRW reduction. If this implementation is delayed, the expected company profitability will be postponed.

Table 6.13. Financial Viability of DAWASCO

	2013/14	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2024/25**	**2030/31**
Water supplied (m^3, thousands)	86,346	85,872	100,010	129,837	160,608	191,613	222,855	269,797	283,554
NRW (%)	56%	55%	52%	48%	45%	42%	39%	31%	25%
Average sewage flow (m^3, thousands)	18,903	18,903	20,000	22,300	24,865	27,724	30,912	53,273	102,365
Income and expenditure statement (TSh, millions)									
Total revenues	**48,104**	**50,995**	**68,280**	**109,279**	**142,283**	**178,968**	**217,204**	**300,139**	**356,871**
Net DAWASCO income	**25,367**	**32,772**	**43,119**	**73,262**	**95,196**	**119,538**	**144,912**	**199,674**	**236,535**
Total O&M costs	**−35,727**	**−30,977**	**−41,852**	**−72,022**	**−88,833**	**−107,508**	**−79,238**	**−102,619**	**−118,451**
Other cost	−842	−10,773	−12,235	−15,932	−20,651	−24,686	−52,064	−67,164	−77,002

Net profit/loss	**−11,203**	**−8,978**	**−10,969**	**−14,692**	**−14,288**	**−12,657**	**13,610**	**29,890**	**41,082**
Profit/loss versus total operating cost	31%	23%	22%	17%	14%	10%	9%	15%	17%

Qualitative Analysis of IWRM Benefits

53. The project includes a major component on IWRM, focused on institutional strengthening, which is not included in the economic and financial analysis. This type of analysis is usually done only for physical components, excluding long-term economic benefits as a result of improvements in policy development and institutional strengthening. However, because of the major importance of the IWRM component, qualitative analysis is performed to assess the respective benefits.

54. The primary benefits of the WRM component will be accrued from implementation of infrastructure and catchment management investments identified through strategic water resources planning and improved basin management institutions and based on adoption of sustainable land, forest, and water management practices. The project interventions are expected to result in improved WRM in all basins and primarily in Wami-Ruvu basin, reduced land degradation, strengthened resilience to climate risk, and improved productivity and incomes of smallholder farmers in priority catchments. The project will also improve flood management. Many of these benefits are indirect and registered in the water use sectors, rather than in the water resources sector that underpins them. Beyond this, the project will have many intangible and hard-to-quantify benefits on natural resources, environment, biodiversity, and livelihoods. While the project will endeavor to register those benefits, these have not been incorporated in the economic analysis.

Subcomponents 1.1. and 1.2.

55. Economic development in the different sectors depends on a sustainable management of the resource. Benefits are therefore mostly indirect. The project seeks to improve the country's ability to better regulate flows and water quality to help optimize its multiple demands—hydropower, irrigation, urban water supply, flood management, and ecosystem management. There is a need for sustained commitment to project-related sectors—not only for O&M of investments but also for scaling up investments in water and other natural resources information, institutions, and infrastructure. To address the issue of long-term financial sustainability, the project will provide assistance to the MOWI in analyzing institutional and financial aspects of basin management in the context of the water sector institutional reform, including possible management, financing, and cost recovery options.

56. **Hydromet reform.** The seasonal and annual variability in quality and quantity of water that supports these diverse functions can be estimated through monitoring, analysis, and assessment, thereafter incorporated into planning and operations. Of specific interest is the financial sustainability and fiscal burden of the proposed hydromet reform. Although in terms of direct cost, the proposed institutional setup and water resources monitoring system is more expensive than the current setup, its benefits are considerable in the longer term through improved service delivery and revenue collection and reduced transaction costs in communication and data management.

57. **Disaster management.** Managing the extremes in the hydrologic cycle comprises the essence of WRM, as these events can have severe social and economic consequences on development. Improved disaster risk management systems can produce high rates of return in terms of GDP, maintaining

economic growth and social cohesion. More generally, management aims at deriving the greatest net benefit to society.

58. **Data sharing.** Meteorological and hydrological data often are not widely shared between agencies of Government. This restricts early assessment of drought and other climate conditions and retards its use in drought preparedness, mitigation, and response. Supported by the project strengthening of institutions and establishment of systems for collection, analysis, storage, advice, and dissemination of water resources data, coordination and collaboration across critical sectors at national, basin, and local levels will facilitate data sharing and use and could bring tremendous societal benefits.

Subcomponent 1.3.

59. The catchment management component of the project will generate both on-site and off-site benefits. On-site improvements are related to improved catchment management in the Wami-Ruvu upper catchments, in particular through the promotion of conservation agriculture, agroforestry, and other soil and water conservation measures as well as other small-scale water resources infrastructure. Off-site benefits include reduced sedimentation and improved water flow control, leading to reduced dredging, siltation, flood risk, and, generally, better water availability in the downstream parts of the basin, including the greater Dar es Salaam area. This is based on the assumption that primary beneficiaries of this component are the small-size farmers in selected catchments in the Wami-Ruvu basin. They will benefit directly and indirectly under this component: (a) directly, through support to improved land management, including promoting soil and water conservation agriculture, agroforestry, small-scale irrigation, and water control measures and others and (b) indirectly, through improved microcatchment planning and management. This latter benefit will also be there for downstream dwellers and water users.

60. **Project benefits.** The primary benefit of the proposed investments will accrue in various sectors, through the increase in average energy production by hydropower plants, increase in agriculture productivity, tourism, fisheries, water supply, navigation, and damages avoided through improved drought forecasting and flood management.

61. More precise estimation of these benefits will require detailed modeling of the specific investments and agreed operational rules and water allocation scenarios among the basin's economic water uses, and such studies will be conducted during project implementation in the context of BWB and Water Resource Center of Excellence advice and NWB decisions supported where multicriteria analysis and cost-benefit analysis will be key aspects in decision making.

62. As a conclusion, IWRM can effectively deliver a triple bottom line of economic efficiency, social equity, and environmental sustainability that are essential for sustainable development. IWRM is the foundation for progressing adaptation to climate change.

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