

Document of
The World Bank
FOR OFFICIAL USE ONLY

Report No: PAD2716

INTERNATIONAL DEVELOPMENT ASSOCIATION
PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 174.6 MILLION
(US\$251 MILLION EQUIVALENT)
INCLUDING US\$29 MILLION EQUIVALENT
FROM THE IDA 18 SUB-WINDOW FOR REFUGEES AND HOST COMMUNITIES

AND A PROPOSED GRANT

IN THE AMOUNT OF SDR 20.2 MILLION
(US\$29 MILLION EQUIVALENT)
FROM THE IDA 18 SUB-WINDOW FOR REFUGEES AND HOST COMMUNITIES

TO THE

REPUBLIC OF UGANDA

FOR THE

INTEGRATED WATER MANAGEMENT AND DEVELOPMENT PROJECT

May 23, 2018

Water Global Practice
Africa Region

This document is being made publicly available prior to Board consideration. This does not imply a presumed outcome. This document may be updated following Board consideration and the updated document will be made publicly available in accordance with the Bank's Policy: Access to Information.

CURRENCY EQUIVALENTS

(Exchange Rate Effective April 30, 2018)

Currency Unit = Ugandan Shillings (UGX)

UGX 3,713 = US\$1

SDR 0.69538128 = US\$1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AC	Asbestos Cement
AfDB	African Development Bank
CBA	Cost-Benefit Analysis
CLTS	Community-Led Total Sanitation
CMO	Catchment Management Organization
CMP	Catchment Management Plan
CPF	Country Partnership Framework
CRRF	Comprehensive Refugee Response Framework
DED	Detailed Engineering Design
DP	Development Partner
DUC	Dam under Construction
DWD	Directorate of Water Development
DWRM	Directorate of Water Resources Management
EA	Environmental Assessment
FM	Financial Management
FMS	Financial Management Specialist
FSTF	Fecal Sludge Treatment Facility
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
EF	Environmental Flow
ESHS	Environmental, Social, Health, and Safety
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FIDIC	International Federation of Consulting Engineers (<i>Fédération Internationale des Ingénieurs-Conseils</i>)
GA	Gender Analysis
GBV	Gender-Based Violence
GFS	Gravity-fed Systems
GHG	Greenhouse Gas
GIZ	German Agency for International Cooperation (<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i>)
GoU	Government of Uganda
GRS	Grievance Redress Service
IA	Implementing Agency
IFMS	Integrated Financial Management System

IFR	Interim Financial Report
IPF	Investment Project Financing
IPILC	Integrated Program to Improve the Living Conditions
IRR	Internal Rate of Return
IT	Information Technology
IWMDP	Integrated Water Management and Development Project
IWRM	Integrated Water Resources Management
KfW	German Government-owned Development Bank (<i>Kreditanstalt für Wiederaufbau</i>)
KPI	Key Performance Indicator
LVEMP	Lake Victoria Environmental Management Program
M&E	Monitoring and Evaluation
MoFPED	Ministry of Finance, Planning, and Economic Development
MoPS	Ministry of Public Service
MWE	Ministry of Water and Environment
NDP	National Development Plan
NEMA	National Environment Management Authority
NPF	New Procurement Framework
NPHC	National Population and Housing Census
NPV	Net Present Value
NRW	Non-Revenue Water
NSDS	National Service Delivery Survey
NWSC	National Water and Sewerage Corporation
O&M	Operation and Maintenance
OHS	Occupational, Health, and Safety
OP/BP	Operational Policy / Bank Policy
OPM	Office of the Prime Minister
P&CD	Planning and Capital Development
P&CDD	Planning and Capital Development Division
PAP	Project-Affected Person
PDO	Project Development Objective
PDU	Procurement Disposal Unit
PP	Procurement Plan
PPDA	Public Procurement and Disposal of Public Assets
PPP	Public-Private Partnership
PPSD	Project Procurement Strategy for Development
PST	Project Support Team
RAP	Resettlement Action Plan
REHOPE	Refugee and Host Population Empowerment
RfQ	Request for Quotation
RGC	Rural Growth Center
RPF	Resettlement Policy Framework
RVP	Regional Vice President
RHC	Refugee and Hosting Communities
RWSD	Rural Water and Sanitation Department
RWSS	Rural Water Supply and Sanitation

RWSSD	Rural Water Supply and Sanitation Department
SA	Social Assessment
SBD	Standard Bidding Document
SDG	Sustainable Development Goal
SDR	Special Drawing Rights
SORT	Systematic Operations Risk-Rating Tool
SPD	Standard Procurement Document
SSIP	Sector Strategic Investment Plan
STD	Sexually Transmitted Disease
STEP	Systematic Tracking of Exchanges in Procurement
TA	Technical Assistance
ToR	Terms of Reference
UBOS	Uganda Bureau of Statistics
UGX	Ugandan Shillings
UNHCR	United Nations High Commissioner for Refugees
UO	Umbrella Organization
UPMIS	Utility Performance Monitoring and Information System
UWA	Umbrella Water Authority
UWSSD	Urban Water Supply and Sanitation Department
WASH	Water, Sanitation, and Hygiene
WESLD	Water and Environment Sector Liaison Department
WESWG	Water and Environment Sector Working Group
WIS	Water Information System
WMDP	Water Management and Development Project
WMZ	Water Management Zone
WSDF	Water and Sanitation Sector Development Facility
WSS	Water Supply and Sanitation
WTP	Water Treatment Plant
WWTP	Waste Water Treatment Plant

Regional Vice President: Makhtar Diop
 Country Director: Diarietou Gaye
 Senior Global Practice Director: Guang Zhe Chen
 Practice Manager: Catherine Tovey
 Task Team Leaders: Carmen Yee-Batista, Berina Uwimbabazi



UGANDA
INTEGRATED WATER MANAGEMENT AND DEVELOPMENT PROJECT

TABLE OF CONTENTS

I. STRATEGIC CONTEXT	1
A. County Context.....	1
B. Sectoral and Institutional Context	2
C. Higher-Level Objectives to which the Project Contributes.....	6
II. PROJECT DEVELOPMENT OBJECTIVES.....	7
A. PDO.....	7
B. Project Beneficiaries.....	7
C. PDO-Level Results Indicators	7
III. PROJECT DESCRIPTION.....	8
A. Project Components.....	8
B. Project Cost and Financing.....	11
C. Lessons Learned and Reflected in the Project Design	12
IV. IMPLEMENTATION.....	12
A. Institutional and Implementation Arrangements	12
B. Results Monitoring and Evaluation	13
C. Sustainability	14
D. Role of Partners.....	15
V. KEY RISKS	15
A. Overall Risk Rating and Explanation of Key Risks.....	15
VI. APPRAISAL	16
A. Economic and Financial (if applicable) Analysis.....	16
B. Technical.....	18
C. Financial Management.....	19
D. Procurement	20
E. Environmental and Social (including Safeguards).....	20
F. Climate Change Co-Benefits.....	24
G. World Bank Grievance Redress	25



VII. RESULTS FRAMEWORK AND MONITORING	26
ANNEX 1: DETAILED PROJECT DESCRIPTION	45
ANNEX 2: IMPLEMENTATION ARRANGEMENTS.....	61
ANNEX 3: IMPLEMENTATION SUPPORT PLAN	84
ANNEX 4: FINANCIAL AND ECONOMIC ANALYSIS	87



BASIC INFORMATION

Country(ies)	Project Name	
Uganda	Integrated Water Management and Development Project	
Project ID	Financing Instrument	Environmental Assessment Category
P163782	Investment Project Financing	B-Partial Assessment

Financing & Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach (MPA)	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Disbursement-linked Indicators (DLIs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made Disaster
<input type="checkbox"/> Alternate Procurement Arrangements (APA)	

Expected Approval Date	Expected Closing Date
14-Jun-2018	02-Dec-2024

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The PDO is to improve access to water supply and sanitation services, integrated water resources management, and operational performance of water and sanitation service providers in Project areas.

Components

Component Name	Cost (US\$, millions)
Component 1: WSS in Small Towns and RGCs and Support to Districts Hosting Refugees	161.50



Component 2: WSS in Large Towns and Support to District Hosting Refugee	120.50
Component 3: Water Resource Management	25.50
Component 4: Project Implementation and Institutional Strengthening	5.50

Organizations

Borrower: Ministry of Finance, Planning and Economic Development, Uganda

Implementing Agency: National Water And Sewerage Corporation
Ministry of Water and Environment

PROJECT FINANCING DATA (US\$, Millions)**SUMMARY**

Total Project Cost	313.00
Total Financing	313.00
of which IBRD/IDA	280.00
Financing Gap	0.00

DETAILS**World Bank Group Financing**

International Development Association (IDA)	280.00
IDA Credit	251.00
IDA Grant	29.00

Non-World Bank Group Financing

Counterpart Funding	8.00
Borrower	8.00
Other Sources	25.00
GERMANY: KREDITANSTALT FUR WIEDERAUFBAU (KFW)	25.00

IDA Resources (in US\$, Millions)



	Credit Amount	Grant Amount	Total Amount
National PBA	222.00	0.00	222.00
Refugee	29.00	29.00	58.00
Total	251.00	29.00	280.00

Expected Disbursements (in US\$, Millions)

WB Fiscal Year	2018	2019	2020	2021	2022	2023	2024	2025
Annual	0.00	8.00	30.00	50.50	58.00	62.50	47.00	24.00
Cumulative	0.00	8.00	38.00	88.50	146.50	209.00	256.00	280.00

INSTITUTIONAL DATA**Practice Area (Lead)**

Water

Contributing Practice Areas

Climate Change, Energy & Extractives, Gender

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag**Does the project plan to undertake any of the following?**

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF	Yes
b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)**Risk Category****Rating**

1. Political and Governance

● Substantial



2. Macroeconomic	● Moderate
3. Sector Strategies and Policies	● Moderate
4. Technical Design of Project or Program	● Moderate
5. Institutional Capacity for Implementation and Sustainability	● Substantial
6. Fiduciary	● Substantial
7. Environment and Social	● Substantial
8. Stakeholders	● Moderate
9. Other	● Substantial
10. Overall	● Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

Yes No

Does the project require any waivers of Bank policies?

Yes No

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03		✓
Natural Habitats OP/BP 4.04	✓	
Forests OP/BP 4.36	✓	
Pest Management OP 4.09		✓
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10		✓
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37	✓	
Projects on International Waterways OP/BP 7.50	✓	



Projects in Disputed Areas OP/BP 7.60



Legal Covenants

Sections and Description
Schedule 2 - Project Execution

Section I.A.1. The Recipient shall, not later than six (6) months after the Effective Date, appoint in accordance with the provisions of Section III of this Schedule 2, and thereafter maintain at all times during Project implementation, a Project support team (“Project Support Team”) within the MWE, consisting of a water resources management specialist, a procurement specialist, an assistant procurement specialist, an environmental specialist, a social specialist, a financial management specialist, an assistant financial management specialist and a monitoring and evaluation specialist, all with qualifications, experience and terms of reference acceptable to the Association.

Section I.B.1. Subsidiary Agreement: To facilitate the carrying out of the NWSC’s Respective Part of the Project, the Recipient shall make available part of the proceeds of the Financing allocated from time to time to the NWSC, under a subsidiary agreement between the Recipient and the NWSC, under terms and conditions approved by the Association (“Subsidiary Agreement”).

Section I.F.1. The Recipient shall ensure that the Project is carried out in accordance with the Safeguard Frameworks and Safeguard Instruments.

Conditions

Type	Description
Effectiveness	<p>(1) The Subsidiary Agreement, in form and substance satisfactory to IDA, has been executed on behalf of the Recipient and the NWSC;</p> <p>(2) The Recipient has prepared and adopted the Project Implementation Manual, in accordance with the provisions of Section I.C of Schedule 2 to the FA; and</p> <p>(3) IDA is satisfied that the Recipient has an adequate refugee protection framework.</p>
Disbursement	<p>(1) Notwithstanding the provisions of Part A , no withdrawal shall be made, under Category 2, unless and until the Recipient has furnished evidence satisfactory to the Association that NWSC has carried out the Augmented Water Supply Study for the Mbale Subproject.</p>



Type	Description
Effectiveness	Article V, 5.02 - The Additional Legal Matter consists of the following, namely, that the Subsidiary Agreement has been duly authorized or ratified by the Recipient and by the NWSC, and is legally binding upon the Recipient and the NWSC, in accordance with its terms.



I. STRATEGIC CONTEXT

A. County Context

1. **Uganda's economy averaged 4.5 percent gross domestic product growth from 2011 to 2016 and 3.5 percent in 2017.** The current economic slowdown is driven by adverse climate conditions, unrest in South Sudan, private sector credit constraints, and slow execution of public sector projects. Economic forecasts indicate that the economy will recover in 2018 and that Uganda's oil sector and public and private sector investments will provide the resources required for the country to reach middle-income status by 2020.¹ The most critical risk to this outlook is regional instability, particularly from the ongoing conflict in South Sudan. An estimated one million South Sudanese refugees have already migrated to Uganda. The continuation of this conflict could affect export earnings and place an excessive amount of pressure on Uganda's public services and natural resources. Other potential development constraints include delays in capital investment programs, high population growth, limited water supply and sanitation (WSS) infrastructure, and insufficient water resources to meet the country's demands. Adequate water resource management is particularly key to Uganda's economic outlook given the country's dependence on agriculture (approximately 69 percent of Ugandans work in agriculture) and recent shift toward industrialization.²

2. **Uganda has achieved remarkable results in poverty reduction, but poverty rates remain high in the Northern and Eastern regions.** From 1992 to 2013, the percentage of Ugandan households living in poverty nearly halved.³ However, according to the Uganda Poverty Assessment Report (2016),⁴ in 2013 more than a third of Ugandans lived below the international extreme poverty line of US\$1.90 per day. Moreover, the risk of Ugandans falling back into poverty is high; for every three Ugandans that moved out of poverty, two fell back into poverty. Poverty has become increasingly concentrated in Uganda's Northern and Eastern regions. Approximately 84 percent of Uganda's poor (living below US\$1.90 per day) reside in the Northern and Eastern regions, where 43 percent of the residents live on less than US\$1 a day. Economic growth in these regions has been affected by the civil conflict in South Sudan, an influx of refugees, significant land degradation, and climate change.

3. **Demographic trends and urbanization pose a daunting challenge to Uganda's economic growth and underscore the need for better urban planning and basic service provision.** Uganda's population of 35 million is expected to reach 80 million by 2040. Uganda's annual urban growth rate of 5.2 percent is among the highest in the world, and the urban population is expected to grow from 6.4 million (2014) to 22 million by 2040. About 60 percent of the current urban population, however, lacks basic amenities, such as decent housing and WSS services. In addition, many small towns and rural growth centers (RGCs) have emerged around the country, creating greater demand for services.⁵

¹ Uganda Vision 2040 objective.

² As Uganda industrializes, water resources management will be critical to ensuring steady growth of the energy, agriculture, industry, and tourism sectors as well as to sustaining human and environmental health.

³ From 1993 to 2013, households living in poverty went from 68.1 percent to 33.2 percent.

⁴ World Bank, The Uganda Poverty Assessment Report 2016.

⁵ Small towns refer to urban centers considered town councils by the Uganda Bureau of Statistics (UBOS) with population between 5,000 and 15,000; the rural sector includes all rural communities with a population of up to 5,000. Communities are considered rural when they are in a rural sub-county defined by the UBOS. RGCs have a population between 1,500 and 5,000.



4. **Land resources, water resources, and basic services have been further strained by the influx of refugees.** Uganda is the largest refugee-hosting country in Africa and one of the top five in the world. According to data from the United Nations High Commissioner for Refugees (UNHCR), Uganda had the highest number of new refugees in the world in 2016; Uganda hosted 940,835 refugees, 514,000 of whom arrived during the second half of the year. By December 2017, the number of refugees had increased to 1.4 million. About 75 percent of these refugees are from South Sudan⁶ and approximately 70 percent have settled in the West Nile area of northern Uganda, predominately in five districts (Yumbe, Arua, Moyo, Adjumani, and Lamwo). These districts are among the poorest areas in the country and are in the early stages of recuperating from a protracted civil conflict.

5. **Uganda has a progressive refugee policy framework that grants refugees the right to work, to move freely, and to access Ugandan social and public services.** This policy, however, places an additional layer of stress on host communities, which are mostly poor small towns and rural areas that suffer from inadequate infrastructure, limited social capital, low productivity, and environmental degradation due to climatic and soil conditions. The inability to address the development needs of host communities may undermine Uganda's long-standing open-door refugee policy.

B. Sectoral and Institutional Context

6. **The Government of Uganda (GoU) has built a comprehensive legal and institutional framework to improve WSS and water resources management.** Uganda has a clear tariff and regulatory structure based on socioeconomic conditions and cost recovery principles. The roles and responsibilities of stakeholders are well defined. The Ministry of Water and Environment (MWE) is responsible for determining priorities, setting policies and standards for water development, and regulating water resources activities and WSS services. The National Water and Sewerage Corporation (NWSC), an autonomous public utility owned by the GoU and positioned under the MWE, is responsible for WSS provision in 30 large and 204 small towns.⁷ In small towns and rural areas that are not served by the NWSC, local authorities (town councils), with the support of the MWE, are responsible for WSS service delivery. The town councils act as water service providers (water authorities) and can elect to provide service directly, utilize community-based organizations, or employ private companies. The MWE provides the water authorities with support through its Water and Sanitation Sector Development Facilities (WSDFs) that provide financing and guidance for the design and implementation of WSS systems and through six regional umbrella organizations (UOs) that provide high-level assistance on operation and maintenance (O&M) related activities. The UOs are limited guarantee companies that have successfully provided technical, managerial, and financial management (FM) support to water authorities since 2001. Currently, the UOs receive subsidies from the GoU and development partners (DPs) to conduct these activities.

7. In the early 1990s, the GoU implemented significant policy reforms, including the commercialization and modernization of the NWSC. These reforms, coupled with significant capital

⁶ The number of refugees has increased to 1.4 million as of December 2017, of which 52 percent are characterized by women and girls and 61 percent by children under 18 years. Approximately 75 percent of the refugees originate from South Sudan; 17 percent from the Democratic Republic of Congo; and 3 percent from Burundi, Somalia, and other countries.

⁷ Large urban towns are cities and municipalities defined as urban centers by the UBOS' National Population and Housing Census (NPHC). Urban centers include all areas gazetted as city, municipality, town council by the UBOS.



investments, have led Uganda to remarkable improvements in water supply service provision, especially in urban areas where coverage increased from 43 percent in 1990 to 77 percent in 2017.

8. The GoU has adopted an integrated water resources management (IWRM) approach as part of its water sector reform program, but more needs to be done to consolidate and fully implement IWRM across the country. IWRM is a critical part of the country's strategy to ensure water security given current climate variability and climate change. Since the early 2000s, the sector has taken important steps to build an appropriate policy and institutional framework for IWRM. The MWE established four deconcentrated Water Management Zones (WMZs) to guide the development and implementation of an IWRM approach at the regional level. The MWE, with the participation of multiple stakeholders, has developed water resources strategies for three of the four WMZs and catchment management plans (CMPs) in identified hot spot sub-catchment areas.⁸ The current focus of the MWE is to consolidate and fully implement IWRM across the country by strengthening strategic planning instruments, improving information systems, and implementing CMPs.

9. Demographic, climate, and development trends point to increased pressure on Uganda's water resources. While Uganda's per capita freshwater resource is among the highest in the world, lack of infrastructure, climate variability, and environmental degradation hamper the country's ability to meet water demands. Estimates indicate that water use will triple by 2035. Although this future demand would only constitute about a fifth of the net water available, high climate variability and underdeveloped water resources infrastructure could result in significant water stress in areas of the country. According to the National Water Resources Assessment (2013), only 2.8 percent of the internal renewable water resources are currently utilized, yet almost three-fourths of districts will experience high or extreme water stress by 2035. A 2015 climate diagnostic for Uganda showed that increased temperatures would produce higher levels of potential evapotranspiration, leading to a more arid climate throughout the country.⁹ At the same time, climate change is expected to result in more intense precipitation that is likely to lead to damaging and life-threatening floods over the next 10 years.¹⁰ These climate hazards entail significant risk to water resources and to WSS infrastructure.

10. Despite considerable progress in the WSS sector, Uganda still faces challenges to improve WSS delivery in small towns and RGCs, ensure water security, and provide adequate sanitation in large towns. National water supply coverage levels (77 percent in urban areas and 67 percent in rural areas) mask disparities in service quality between urban and small towns/rural areas. In urban areas, 48 percent of households use piped water, but that number falls to 33 percent in small towns and to 9 percent in rural areas. Most of the country relies on community point sources.¹¹ Despite an acceptable level of functionality of water systems (80 percent in rural and small towns), many people still travel long distances to fetch water. Populations with insufficient potable water oftentimes use unsafe water sources, triggering cholera, typhoid fever, and diarrhea outbreaks as well as adverse social consequences, such as

⁸ There is an emerging recognition that catchment management activities form an integral part of cost-effective WSS service. For instance, water source protection is included in all water supply projects to ensure quality and quantity of water resources. The MWE is strengthening its data collection and analysis capabilities to ensure that decision making is based on scientific analysis and informs investments and water resources-related policies.

⁹ World Bank. 2015. "Uganda Climate Profile."

¹⁰ Global Facility for Disaster Reduction and Recovery. Thinkhazard.com. <http://www.thinkhazard.org/en/report/253-uganda> (accessed February 7, 2018).

¹¹ Point sources include community systems operated by hand pump boreholes or protected springs.



sexual and domestic violence.¹² In the districts hosting refugees, water demand far exceeds available water supply. The poor location of boreholes, frequent pump breakdowns, and distribution challenges in scattered refugee zones compromise water service and supply. The UNHCR relies on water trucking, a very expensive option,¹³ to meet the minimum water demands (20 L per person per day).

11. **Sanitation coverage poses another significant challenge.** The United Nations Joint Monitoring Program reports that only 29 percent of the urban and 17 percent of the rural populations have access to individual improved sanitation facilities. Sewerage coverage is less than 7 percent in large towns and negligible in small towns. The low sanitation coverage indicates poor on-site sanitation conditions from unlined public and household toilets and inadequate wastewater treatment and fecal sludge management. In refugee settlements, sanitation coverage is low given insufficient pit latrines¹⁴ and communal sanitation facilities. These deficiencies have caused severe water pollution and related environmental and public health issues.

12. **In response to these challenges, the GoU has developed programs and policies focused on improving WSS services in poor small towns and RGCs.** Since the early 2000s, the GoU has supported the introduction of private operators to manage piped water systems in small towns through management contracts with local governments (town councils). Despite success with this private delivery model, scaling up has been difficult, and the GoU has opted to apply a clustering (regionalization) service delivery approach in which the NWSC assumes management responsibility.¹⁵ Since 2014, the MWE has transferred service responsibility for 204 small towns to the NWSC.¹⁶ The small towns managed by the NWSC have experienced marked improvement in revenue collection, network expansion, and service quality. The GoU plans to continue transferring small towns to the NWSC as long as it is technically and financially viable for the corporation. When it is not feasible, the MWE will transfer management responsibility of piped WSS systems to the regional UOs.¹⁷ The GoU's decision to move forward with this 'umbrella approach' was made after careful consideration of options with DPs and stakeholders. The German Technical Cooperation's study on the 'Reorganization of Water Supply and Sewerage Service Areas in the Urban Water and Sanitation Sub-sector' ultimately informed the approach. The MWE is currently developing guidelines for the UOs to direct and streamline their operation and to establish a specific tariff structure. In August 2017, the MWE appointed six regional UOs (Northern, Midwestern, Karamoja, Southwestern,

¹² The MWE commissioned a Gender Impact Study of the Water and Sanitation Sub-Sector in March 2017. The study showed that women and girls are vulnerable to sexual violence when they travel distances to fetch water.

¹³ Trucking cost ranges from UGX 300,000 to UGX 500,000 per trip. Water trucking is usually intended for the initial phase of a humanitarian emergency to meet minimum water demands of refugee settlements. However, water trucking currently accounts for over 30 percent of the total water supply in refugee settlements. This percentage surges past over 50 percent in some districts in West Nile.

¹⁴ Per the 2017 UNHCR WASH Gap Analysis, sanitation coverage in the West Nile is about 34 percent. Sanitation coverage at household level in heavily districts hosting refugees such as Yumbe, Arua, and Moyo is 24 percent, 22 percent, and 6 percent, respectively.

¹⁵ Challenges from the private delivery model include (a) high investment needs due to significant infrastructure backlogs, (b) difficulties attracting private operators to work in poor and challenging districts coupled with unattractive contract conditions, and (c) weak regulatory measures to monitor and evaluate performance.

¹⁶ The MWE has followed clear and transparent guidelines and procedures for the transfer process, which begins with a formal request from local government units and is followed by a due diligence assessment and approval by the NWSC's management. Once the NWSC takes responsibility for the service, the NWSC's financial, commercial, and technical systems will be applied in the small towns.

¹⁷ In accordance with the findings of the Reorganization of Water Supply and Sewerage Service Areas in the Urban Water and Sanitation Sub-Sector in Uganda, Phase II - Preferred Option Report, December 2016.



Central, and Eastern) as Umbrella Water Authorities (UWAs) in charge of 71 small towns (about 10 small towns per UWA). To date, the UWAs have performed relatively well with average revenue collection rate and non-revenue water (NRW) at 75 percent and 29 percent, respectively. Financial data indicate that the Northern Umbrella and the Midwestern Umbrella service 2,809 and 2,387 active connections, respectively, and collected UGX 27.5 million and UGX 33.6 million in October 2017, respectively. Their O&M costs for October 2017 were UGX 16.3 million and UGX 27.1 million, respectively.¹⁸ While the UWAs can cover their routine O&M costs, they are still dependent on public financing for capital investments and for providing assistance on O&M related-activities to other local water authorities. The Project's financial analysis, however, indicates that the GoU's policies will enable the UWAs to reach cost recovery in five years.

13. **Among other new approaches, the GoU launched a comprehensive water supply program for RGCs that includes the adoption of solar technology for pumping and community involvement in system design/operations.** For sanitation in small towns and RGCs, the MWE is focused on implementing sanitation monitoring and behavior change approaches, including (a) Community-Led Total Sanitation (CLTS) and sanitation marketing; (b) construction of on-site sanitation facilities in public markets and schools; and (c) construction of fecal sludge treatment facilities (FSTFs). More attention needs to be given to the full sanitation service chain to ensure human waste is contained, conveyed, treated, and reused/disposed of safely and sustainably. DPs, including the World Bank, are providing technical assistance (TA) to the MWE to improve fecal sludge management.

14. **The GoU has also prioritized basic infrastructure investments in several large towns in the Northern and Eastern regions to achieve more integrated and balanced economic development.** The NWSC and the MWE are prioritizing WSS investments in the municipalities of Gulu and Mbale, given their contributions to the country's economy and their water security issues. Gulu Town, the economic capital of the Northern region is experiencing an average population growth of 5.2 percent per year. Nevertheless, at least 70 percent of Gulu's population lives below the poverty line and only 4 percent of the town is reported to have access to piped water. Moreover, the town is susceptible to dry spells and has experienced severe water shortages. The critical water supply situation in Gulu is the result of two decades without infrastructure investments because of the civil unrest. Further to the east, Mbale, a coffee-producing area, is dubbed the business hub of eastern Uganda; its proximity to Kenya allows for easier trade. Economic opportunity in the town has spurred migration, which in turn has triggered rapid population growth and the development of new settlements that are stretching the capacity of current service providers (town councils and the NWSC).

15. **The GoU, UNHCR, and other DPs have come together to provide a more comprehensive development response to WSS delivery challenges in districts hosting refugees.** Uganda is one of the few countries in the world that is piloting the UNHCR's Comprehensive Refugee Response Framework (CRRF).¹⁹ Uganda has developed a multi-stakeholder Refugee and Host Population Empowerment (REHOPE) Strategic Framework to harmonize development approaches and programming among partners. Improving WSS service delivery in the West Nile districts hosting refugees is key to delivering on

¹⁸ Running O&M consists of operator remuneration, energy, chemicals, and routine maintenance.

¹⁹ The CRRF aims to provide a more predictable and sustainable response that benefits districts hosting refugees by linking humanitarian and development efforts early on. The CRRF strengthens inclusive service delivery while calling for more robust and expanded planning and opportunities for durable solutions and includes a 'whole of society' approach, involving a broad range of actors and new partnerships.



the CRRF and REHOPE agenda. At a recent Water, Sanitation, and Hygiene (WASH) stakeholder forum, a consensus was reached between the UNHCR, Office of the Prime Minister (OPM), and MWE that humanitarian assistance should transition from emergency response toward long-term sustainable development solutions. In that context, given that refugees in settlements currently do not pay for water, the UNHCR and OPM are collaborating with the MWE on designing a new water tariff policy for refugee settlement areas.

16. **The World Bank is well positioned to support the water sector program in Uganda** and has a long history in the Ugandan water sector. The World Bank recently financed the Lake Victoria Environmental Management Project Phase II (LVEMP II, P100406) and is currently financing the Water Management and Development Project (WMDP, P123204). These projects finance major water-related investments in priority urban areas and various measures to improve IWRM planning and development. The World Bank also has experience in the rural sector through the Uganda Water Small Towns and RGCs (P102462), which provided TA and capacity building for the development of the water sector. The proposed Integrated Water Management and Development Project (IWMDP, the Project) builds on the achievements of the WMDP, paying special attention to the vulnerable Northern and Eastern regions, districts hosting refugees, and areas with low WSS coverage.

C. Higher-Level Objectives to which the Project Contributes

17. **The proposed Project will support the GoU’s Vision 2040, which aims to transform Uganda into a modern and prosperous country.** The Second National Development Plan (NDP II), which is aligned with Vision 2040, focuses on promoting inclusive economic growth and achieving the United Nation’s Sustainable Development Goals (SDGs), including SDG #6, ‘Ensure availability and sustainable management of water and sanitation for all’. The NDP II also identifies the following priority actions: (a) increasing the stock and quality of strategic infrastructure to accelerate the country’s competitiveness; (b) engaging human capital development; (c) strengthening mechanisms for quality, effective, and efficient service delivery; and (d) improving refugee management and host community development. Water is at the center of the NDP II, which highlights interventions focused on (a) improving WSS services in priority, northern large towns envisioned as economic regional hubs; (b) expanding WSS access to the poor and vulnerable in underserved areas, including districts hosting refugees; and (c) strengthening water sector institutions to improve IWRM and service delivery.

18. **The Project also supports the GoU’s strategy, as documented in the NDP II, CRRF, and REHOPE, for a holistic and sustainable development approach for refugee management and host communities.** The GoU’s primary focus is to complement humanitarian aid with long-term development investments for districts hosting refugees to address the needs of refugees while building resilience in the host communities. To that end, the Project will focus on the most vulnerable districts hosting refugees in the West Nile and Northern region and support long-term WSS investments in infrastructure development, planning at the district level, and capacity building to enable the local governments to better promote sustainable development and peaceful cohabitation within districts hosting refugees.

19. **The Project is consistent with the World Bank’s 2016–2021 Country Partnership Framework (CPF) (Report No. 101173-UG, discussed by the Executive Directors on April 21, 2016).** The Project directly supports ‘Objective Four: Enhanced Resilience of the Poor and Vulnerable’ by improving access to WSS services in districts hosting refugees and other vulnerable towns and rural areas as well as



implementing CMPs focused on protecting water sources and agriculture production against droughts and floods, environmental degradation, and other impacts of climate change. The Project also directly supports ‘Objective Six: Improved Access to Urban Services’ by financing WSS investments to improve coverage, quality, and efficiency of service in prioritized large and small towns.

20. **The Project supports achievement of the World Bank’s twin goals of eliminating extreme poverty and promoting shared prosperity.** Investments in water infrastructure act as catalysts for local development and economic activity. Bringing higher quantities and more reliable water to households enhances quality of life by (a) reducing the time and effort to collect water—a task that women and children are usually responsible for; (b) reducing the incidence of waterborne diseases; and (c) diminishing absenteeism from work and school and the associated lost income and opportunity costs. In addition, the Project will assist in improving IWRM and bringing WSS services to the residents of the underserved and vulnerable Northern and Eastern regions.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

21. The Project Development Objective (PDO) is to improve access to water supply and sanitation services, integrated water resources management, and operational performance of water and sanitation service providers in Project areas.

B. Project Beneficiaries

22. The Project expects to benefit approximately 1,403,000 people (including 99,000 refugees, 173,000 hosting community citizens, and 716,000 females) with increased access to improved WSS services. The Project will increase the availability of safe drinking water, reduce the distance people must travel to access safe WSS systems, secure water sources to ensure sustainable supply, and improve sanitary conditions at the household and community levels. Local communities will also benefit from catchment management activities focused on building capacity for modern land use management and improved agroforestry farming practices. The Project will also strengthen the resilience of the systems to water-related shocks. Service providers (UWAs and the NWSC) and their staff will benefit from TA and investments focused on strengthening their financial and operational performance. In addition, local communities and regional and local organizations will be empowered to identify, prioritize, and support investments in water-related infrastructure and services. See Annex 1 for additional information.

C. PDO-Level Results Indicators

23. PDO indicators for the proposed Project include the following:

- Direct Project beneficiaries (number), of which female (percentage) and refugees (percentage)²⁰

²⁰ Direct beneficiaries that are receiving a direct benefit from water supply investments, sanitation investments and water resources measures.



- Area under integrated water resources management in selected catchments supported by the Project (ha)²¹
- Percentage of the service areas achieve cost recovery ratio of 1.1 by the Project²²
- People provided with access to improved water sources (number)
- People provided with access to improved water sources (number), of which female, refugees, and citizens in host communities (number)
- People provided with access to improved sanitation services (number), of which female, refugees, and citizens in host communities (number)

III. PROJECT DESCRIPTION

A. Project Components

24. The Project will support WSS infrastructure investments in small towns located primarily in Uganda's Northern and Eastern regions and in RGCs in the country's Central and Midwestern regions. The water resources activities are designed to consolidate IWRM in overall water sector planning and infrastructure development. Specific water resources measures will be conducted in the Upper Nile and Kyoga WMZs where CMPs have been prepared for sub-catchments and where most of the WSS infrastructure investments proposed under this Project are located. The Project will integrate infrastructure investment, water source and catchment protection measures, and comprehensive sanitation planning to ensure sustainability and increased resilience to climate change and variability. The Project will provide TA aimed at consolidating water sector reforms to support efficient and effective service delivery models for small towns and RGCs.

25. With financing from the IDA 18 Sub-Window for Refugees and Host Communities (RHC), the Project will support activities designed to improve the sustainable provision of WSS services to host communities and refugee settlements focusing on the districts of Yumbe, Arua, Moyo, Adjumani in the West Nile and Lamwo in the Northern Region, where about 70 percent of the refugees in Uganda are being hosted, as well as the Mid-west district of Kiryandongo, which is currently experiencing large inflows of refugees from South Sudan.

26. The Project includes the following four components. Annex 1 presents a detailed Project description.

Component 1: Water Supply and Sanitation in Small Towns and Rural Growth Centers and Support to Districts Hosting Refugees (US\$161.5 million, of which national IDA US\$114.5 million, IDA 18 Sub-

²¹ Area refers to the size of land under improved water/land management, including but not limited to farms, river banks, catchments/micro catchments, intakes, and so on. Measures include soil and water conservation, flood protection, afforestation, and livelihood improvement schemes as per agreed CMPs.

²² Cost recovery ratio is the ratio of revenues collected over operating expenses for the selected service areas supported under the Project.



Window for RHC US\$43.0 million (including IDA credit US\$21.5 million and US\$21.5 million IDA grant), and counterpart funds US\$4.0 million)

Subcomponent 1.1: Support to Small Towns and Rural Growth Centers

27. This subcomponent will support activities to improve WSS in selected small towns and RGCs²³ in the Recipient's territory. Activities consist of (a) constructing and rehabilitating WSS facilities, as well as providing associated services, including engineering, environmental and social studies, and supervision of construction activities; (b) preparing and implementing sanitation plans in selected small towns; (c) strengthening the capacity of selected UWAs²⁴ in the areas of operational and financial management, including the establishment of a remote monitoring system for rural water systems; and (d) carrying out environmental and social management-related activities to protect water sources and sensitize communities.

Subcomponent 1.2: Support to Districts Hosting Refugees

28. This subcomponent will support activities to improve WSS in selected districts hosting refugees. Activities consist of (a) constructing and rehabilitating WSS facilities, as well as providing associated services, including engineering, environmental and social studies, and supervision of construction activities; (b) preparing and implementing sanitation plans; (c) strengthening the capacity of selected UWAs in the areas of operational and financial management, including the establishment of remote monitoring system for rural water systems; (d) carrying out environmental and social management-related activities to (i) protect water sources and sensitize communities; and (ii) address the specific needs of host communities and refugees; and (e) strengthening the capacity of the MWE to develop and carry out WSS sector policies and programs that promote more sustainable and efficient service delivery at refugee settlements.

Component 2: Water Supply and Sanitation in Large Towns and Support to Districts Hosting Refugees (US\$120.5 million of which national IDA US\$77.5 million, IDA 18 Sub-Window for Refugees and Host Communities US\$15.0 million (including US\$7.5 million IDA credit and US\$7.5 million IDA grant), counterpart funds US\$3.0 million, and KfW US\$25.0 million)

Subcomponent 2.1: Water Supply and Sanitation in Large Towns

29. This subcomponent will support activities to improve WSS. Activities consist of (a) constructing and rehabilitating WSS infrastructure in the municipality of Mbale, including implementing the recommendations from the Augmented Water Supply Study; (b) constructing water supply system for the municipality of Gulu²⁵; (c) undertaking construction supervision activities and engineering, as well as

²³ Small towns mean any of the following areas of the Recipient's territory: Busia, Namungalwe-Kaliro, Kyegegwa-Mpara-Ruyonza, Namasale, and Butaleja- Busolwe and Budaka - Kadama-Tirinyi-Kibuku. RGCs means any of the following areas: Kasese cluster (Kyarumba, Kyondo, Lake Katwe, and Kisinga); Bitsya -Kurungu; and 30 RGCs benefiting from solar-powered piped water systems.

²⁴ Selected UWA refer to five regional UWA (Northern, Midwestern, Southwestern, Central, and Eastern) appointed as the water authorities in charge of specific water and sanitation service areas as gazetted by the MWE on July 14, 2017 (The Uganda Gazette, Volume CX No. 39).

²⁵ The Gulu Water Supply subproject includes a parallel financing with Kreditanstalt für Wiederaufbau (German Government-



environmental studies, including the Augmented Water Supply Study; (d) strengthening the capacity of the NWSC in the areas of operational and financial management to support improved performance in the project supported areas; and (e) carrying out environmental and social management-related activities with a view to protecting water sources and sensitizing communities.

Subcomponent 2.2: Support to Districts Hosting Refugee

30. This subcomponent will support activities to improve WSS in Adjumani District.²⁶ The activities consist of: (i) constructing and rehabilitating WSS facilities, as well as providing associated services, including engineering, environmental and social studies and supervision of construction activities; (ii) preparing and implementing sanitation plans; and (iii) carrying out environmental and social management related activities to protect water sources and sensitize communities.

Component 3: Water Resources Management (US\$25.5 million of which national IDA US\$25.0 million and counterpart funds US\$0.5 million)

31. This component will support catchment management and restoration activities in selected sub-catchments. Activities consist of (a) undertaking catchment management measures, including soil and water conservation, river bank protection and restoration; and (b) providing alternative livelihoods for affected communities.

32. This component also supports IWRM into the GoU's Water and Environment Sector. Activities consist of (a) preparing a water resources strategy for the Albert WMZ;²⁷ (b) preparing CMPs and related technical studies for priority sub-catchments; (c) undertaking a national groundwater management study; and (d) strengthening water resource monitoring and information systems, including (i) the installation of Water Information System (WIS) at the national and WMZ levels; (ii) the installation of hydrologic monitoring systems; and (iii) the rehabilitation of the National Water Quality Reference Laboratory.

Component 4: Project Implementation and Institutional Strengthening (US\$5.5 million of which national IDA US\$5.0 million and counterpart funds US\$0.5 million)

33. This component will finance Project implementation and coordination support activities. Activities consist of (a) coordinating, planning, monitoring, reporting, and supervision of the Project; (b) providing training to implementing agencies (IAs) (MWE and NWSC) on World Bank FM, procurement, environmental and social policies and procedures; and (c) establishing the Project Support Team (PST).

owned Development Bank - KfW) Development Bank to finance the water intake, water source protection, and WTP. The KfW credit to the NWSC has been approved.

²⁶ Adjumani District" means the towns of Adjumani, Pakele, Ciforo and Dzaipi, as well as the parishes of Agojo and Mungula.

²⁷ Uganda is divided into four WMZs—the Upper Nile, Kyoga, Albert, and Victoria. The current WMDP has focused mainly on two zones—the Upper Nile and Kyoga WMZs—while the LVEMP II has focused on the Victoria WMZ. The proposed Project will provide support for the Albert WMZ, which lies in the western part of Uganda and is characterized by a high topography as well as a high potential for hydropower generation and water supply through GFS.



34. The component will also support institutional strengthening activities, including (a) preparing a WSS sector financing study to support the implementation of the Recipient’s Sector Strategic Investment Plan (SSIP) and (b) strengthening the MWE’s regulatory functions at the regional level.

B. Project Cost and Financing

35. The Project’s estimated cost is US\$313 million. IDA will provide Project financing in an amount equivalent to US\$280 million, of which US\$70 million will be used to finance the subcomponents supporting districts hosting refugees (1.2 and 2.2). The IDA 18 Sub-Window for RHC (US\$29 million credit and US\$29 million grant) and national IDA (US\$12 million) will finance Subcomponents 1.2 and 2.2. The GoU will be responsible for providing US\$8 million in counterpart financing to cover a portion of operating costs, the acquisition of land, and any compensation due to people affected by the Project. The KfW Development Bank will finance US\$25 million of the new water supply scheme in Gulu under Component 2.²⁸ Table 1 provides a summary of the cost estimates and proposed financing arrangements.

Table 1. Project Cost Estimates and Financing

Project Description	Total Project Cost	Total IDA Amount	IDA 18 National Credit	IDA 18 RW Credit	IDA 18 RW Grant	Counter part Funding	KfW for Gulu
Component 1: WSS in Small Towns and RGCs and Support to Districts Hosting Refugees	161.5	157.5	114.5	21.5	21.5	4.0	
1.1 Support to Small Towns and RGCs	108.0	105.5	105.5			2.5	
1.2 Support to Districts Hosting Refugees	53.5	52.0	9.0	21.5	21.5	1.5	
Component 2: WSS in Large Towns and Support to Districts Hosting Refugee	120.5	92.5	77.5	7.5	7.5	3.0	25.0
2.1 WSS in Urban Large Towns	102.5	74.5	74.5	0.0	0.0	2.5	25.0
2.2 Support to Districts Hosting Refugees	18.5	18.0	3.0	7.5	7.5	0.5	
Component 3: Water Resources Management	25.5	25.0	25.0	0.0	0.0	0.5	
Component 4: Project Implementation and Institutional Strengthening	5.5	5.0	5.0	0.0	0.0	0.5	
Total Project Costs	313	280.0	222.0	29.0	29.0	8.0	25.0

36. The lending instrument is an Investment Project Financing (IPF) that will support a six-year project implemented by two IAs, the MWE and the NWSC. Selection of the IPF instrument was based on the IPF’s flexibility and suitability to incorporate financing for a broad range of activities, including several specific

²⁸ The US\$25 million comes from a KfW credit, which has already been approved by the Parliament.



investments, TA, and capacity enhancement measures. The Borrower will be the GoU for the full IDA amount.

C. Lessons Learned and Reflected in the Project Design

37. The proposed Project design draws valuable lessons from ongoing operations in Uganda and the World Bank's global experience in small towns and rural areas. The lessons from the ongoing WMDP and LVEMP-II indicate the need to pay closer attention to effectiveness delays and slower-than-desired implementation due to limited readiness at appraisal. See the 'Key Risks' section for more detail on how this lesson is incorporated in the Project design. The Project also incorporates lessons from Uganda's significant experience in solar technology, including engaging experienced engineering firms and embedding capacity building and community consultation in the design and operation of solar-powered piped water schemes projects. Leveraging the World Bank's global experience, the Project design reflects lessons learned from West Africa on private sector involvement and Latin America on the Rural Water and Sanitation Information System (*Sistema de Información de Agua y Saneamiento Rural*).

38. The Project also leverages lessons learned from experience in implementing WASH projects, especially the importance of ensuring proper coordination with humanitarian agencies and national and local governments. In Uganda, a lack of coordination resulted in boreholes being drilled too close to each other or too close to shallow pit latrines, risking contamination of the groundwater and open water sources used by the refugee settlements and host communities. Taking these past issues into account, the proposed Project emphasizes the importance of having coordination mechanisms in place with participation from stakeholders at all levels.

39. The World Bank's global experience highlights the close link between stakeholder engagement throughout the project cycle and the ultimate effectiveness and sustainability of the project. To ensure a sense of ownership and commitment in the beneficiary communities, the Project will promote community participation through consultations before and during implementation. Beneficiary communities will be involved in selecting sites, setting tariffs, and collecting fees. The Project will also support special programs to raise community awareness on the importance of safe drinking water, source protection, and proper sanitary practices. The Project will ensure women's participation in these programs, given that the burden of an inadequate water supply falls most heavily upon their shoulders, and will include measures to prevent Gender-based Violence (GBV) derived from the World Bank's global experience. Furthermore, the Project will actively empower communities by setting up local supervision committees to oversee construction and O&M post Project.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

40. **The Project will use the same implementation arrangements as the WMDP, which utilizes existing GoU systems and structures.** The MWE and the NWSC are the IAs for the IWMDP. The relevant departments of the IAs will be responsible for operational-level activities, including coordination, FM, monitoring, and supervision of their respective component activities. The MWE's Urban Water Supply and Sanitation Department (UWSSD) and Rural Water Supply and Sanitation Department (RWSSD) will have overall responsibility for Component 1, the NWSC through its Planning and Capital Development Division



(P&CDD) for Component 2, the MWE's Directorate of Water Resources Management (DWRM) for Component 3, and the MWE's Department of Commissioner Water and Environment Sector Liaison Department (WESLD) for Component 4. The MWE and the NWSC will appoint focal points to oversee implementation of the main activities. These focal points will report directly to department heads on implementation progress. The existing decentralized management structures (WMZs, NWSC town offices, and UWAs) and local governments will support the IAs in their efforts to deliver outputs in each of the Project areas. The implementation arrangements are considered adequate. Under the WMDP, the NWSC and the MWE (UWSSD, DWRM, and WESLD) satisfactorily implemented WSS and water resources activities and accumulated extensive experience with World Bank implementation procedures. However, both IAs have experienced some weaknesses on procurement and contract management (refer to paragraph 70). The MWE's RWSSD recently implemented a large rural water supply project funded by the African Development Bank (AfDB). The NWSC has a close working relationship with the MWE that will enable synchronization in the implementation of related activities. In addition, the Project will support the hiring of key personnel and provide training to build implementation capacity. A detailed implementation arrangement description is provided in Annex 2.

41. As the NWSC is a corporation with its own identity, it will sign a subsidiary agreement with the Ministry of Finance, Planning, and Economic Development (MoFPED) to facilitate Project implementation. The agreement will specify the amount to be allocated to the NWSC to undertake specific activities under Component 2 and will define the terms and conditions. The signed subsidiary agreement is a condition of effectiveness.

42. **Coordination mechanisms.** Given the number of departments (the MWE's UWSSD, RWSSD, DWRM, and WESLD, and the NWSC's P&CDD) involved in the Project, the MWE's WESLD will take the responsibility for overall coordination and communication. The WESLD will liaise with the different implementation teams to coordinate planning, reporting, supervision, and oversight across departments involved in the Project. The WESLD will engage a PST comprising key technical specialists (for example, water resource management specialist, safeguards, monitoring and evaluation (M&E), procurement, and FM specialists) to assist the MWE and NWSC's focal points. The PST will provide support to the WESLD, assisting all Project implementation departments, units, and agencies to carry out specialized tasks. The PST will also be responsible for consolidating plans, developing budgets, monitoring results, compiling reports, and disseminating outputs and outcomes. For the implementation of the districts hosting refugee subcomponent, the MWE will liaise with the OPM and UNHCR to ensure a coordinated response to refugee inflow, resettlement, and protection issues.

43. The Water and Environment Sector Working Group (WESWG) and relevant governing bodies (for example, the NWSC Board of Directors) will provide high-level operational and policy guidance to ensure that the Project components and activities are implemented as intended. The WESWG members include leaders from the MWE, the NWSC, and other line ministries as well as all DPs who are active in the water and environment sector. The WESWG will facilitate coordination of Project activities with other DPs who are supporting complementary activities.

B. Results Monitoring and Evaluation

44. The IAs will be responsible for monitoring and reporting. The MWE and the NWSC will lead data collection and compilation analysis. An integrated M&E system will be developed and implemented as



part of the Project to support implementation and reporting. Monitoring and reporting will focus on key performance data from specific Project activities that contribute to the Project's intermediate results and PDO-level outcomes. The MWE will submit progress reports every semester to the World Bank. A midterm review will be carried out to evaluate implementation progress and identify potential issues in need of attention and resolution. An end-of-project evaluation will also be conducted two months before Project closing to assess whether the intermediate results and PDO-level indicators were achieved, the sustainability of the results, and lessons learned.

C. Sustainability

45. The Borrower's commitment is ensured by the strong alignment between the Project's investments and national- and institutional-level strategies. The Project is supporting the implementation of Sector Development Plan (2015/2016–2019/2020), which was the result of a comprehensive planning process that included consultation and coordination with national, regional, and local authorities and key DPs. The water resources investments were designed with sustainability in mind; the investments directly support the existing institutions (the MWE and WMZs) in carrying out their mandates and strengthening stakeholder-based institutions such as the Catchment Management Organizations (CMOs). The Project will enhance the capacity of the MWE, WMZs, and CMOs to improve the catchment action planning process, support the implementation of priority investments and studies, develop a functional WIS, and maintain databases and analytical tools that enable water resources to be used optimally and sustainably. The MWE is committed to providing adequate funding for the O&M of these institutions over the long term through annual budgetary provisions that will ensure adequate financing for staff, equipment, and other logistics needs. The catchment management measures, as well as other water resources activities, are essential to safeguarding the future quantity and quality of water sources and adapting to climate change.

46. To ensure the sustainability of the Project's infrastructure investments and the services they provide, the Project supports the implementation of sustainability-focused service management models. The NWSC will continue managing the large towns of Gulu and Mbale, as well as Adjumani Town. The MWE will transfer management responsibilities for Busia, Mbale small towns, and Namungalwe-Kaliro under Component 1 to the NWSC after completion of the works. The UWAs will manage RGCs and two small towns (Kyegegwa-Mpara-Ruyonza and Namasale). The UWAs and the NWSC will apply a clear tariff regulatory structure based on the residents' socioeconomic conditions, cost recovery principles, professionalized commercial operations, and pro-poor measures. The financial assessment indicates that the NWSC and the UWAs will be able to achieve full cost recovery. The Project will finance targeted activities to build UWAs' capacity to sustainably carry out their new direct management responsibilities, which include contract management of private operators, asset management, and revenue collection. The MWE also has ongoing efforts to strengthen its regulatory functions to improve supervision of service delivery providers and to enforce action when underperforming. In addition, the Project will explore the possibility of utilizing professionalization contracts under which a private firm would be contracted to help the UWAs implement and assimilate standard operating procedures and systems (for network, commercial, administrative, and FM aspects).

47. To promote sustainability of the Project's investments in the districts hosting refugees, the MWE is collaborating with the UNHCR to develop new water policies for refugee settlements. The new policies will consist of (a) requiring that refugees begin paying for water once they are settled and engaged in



income-generating activities and (b) technical guidelines for WASH interventions in refugee settlements that include the application of national standards and installation of water meters. The tariff policy will take a phased approach based on the time the refugees have been in the settlements. Under these new policies, residents from host communities will be less likely to seek free water and interventions will be developed in accordance with national standards and guidelines, supporting investments that contribute to long-term objectives.

48. Furthermore, to ensure sustainability from the customer/user perspective, the Project will implement a comprehensive social management plan, including an educational and awareness campaign throughout the Project cycle to ensure beneficiaries' adoption of WSS systems and management models and to promote good hygiene practices and community environmental stewardship. The MWE, in coordination with the local governments, will ensure the sustainability of public sanitation facilities by implementing O&M guidelines and contracting private operators for O&M services.

D. Role of Partners

49. Although the Project will be financed primarily through IDA funds, the GoU and other DPs have indicated their support for financing complementary capacity-building and institutional-strengthening activities, including support to the UWA model and MWE regulatory functions. The GoU and DPs have voiced interest in investing in activities identified during the catchment action planning and management process. In addition, the KfW has committed funds (through parallel financing) for complementary investments for the water supply investments in Gulu. The Project's steering committee, the WESWG, which comprises representatives from the MWE's leadership, other line ministries, and all the DPs supporting the water and environment sector, will ensure participation, coordination, and synchronization between partners and their respective programs/projects.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

50. **The overall risk rating is Substantial.** This is based on the substantial risk ratings for political and governance, institutional capacity for implementation and sustainability, fiduciary (procurement), and environmental and social categories under the Systematic Operations Risk-Rating Tool (SORT). In addition, the risk associated with working in districts hosting refugees is considered Substantial.

51. **Political and governance.** As detailed in the CPF, significant political uncertainty is not foreseen, but governance and effective public-sector management present substantial risks. The Project will mitigate these risks through (a) strengthening the MWE's regulatory framework; (b) carrying out a citizen engagement strategy; and (c) strengthening project implementation efforts in close coordination with local government officials and DPs. Moreover, the World Bank's procurement processes will help safeguard the Project from corruption.

52. **Institutional capacity for implementation and sustainability.** The UWA as a regional service delivery model for small towns and RGCs was recently introduced. Although the decision to scale up this model was informed by extensive analytical work and a pilot project, the UWA model was only recently operationalized. To mitigate this risk, the Project will support the implementation of a professionalized



monitoring system focused on enhancing approaches for revenue collection, including billing software and cashless/mobile payment systems, as well as on strengthening the integration of specialized private operators through improved contract management. In addition, the Project implementation team, using the Utility Performance Monitoring and Information System (UPMIS) tool, will regularly review UWAs and NWSC performances in the selected service areas.

53. **Fiduciary.** The Procurement risk is rated Substantial while FM risk is moderate. The risks identified which relate to delays and skills gaps at different stages of procurement processing as well as the mitigation measures are detailed in Section VI – Appraisal. That said, IWMDP will benefit from the lessons learned and mechanisms put in place under WMDP.

54. **The environmental and social risk.** This risk is deemed Substantial given (a) potential opposition to the introduction of a new service delivery model, including new tariffs and catchment management measures; (b) the influx of new workers in small towns and RGCs; and (c) potentially adverse environmental impacts from the construction and operation of the proposed investments. The environmental and social risk associated with the Project will be managed through the application of an Environmental and Social Management Framework (ESMF), a Resettlement Policy Framework (RPF), and related safeguards instruments (Environmental and Social Impact Assessment [ESIA], Resettlement Action Plans [RAPs]). See the ‘Social and Environmental’ section for more details on these instruments.

55. **Other risks (social tensions in districts hosting refugees).** Tensions between refugees and citizens are caused by inequity in access to and payment for WSS services. While refugees in the settlements benefit from aid from humanitarian organizations and the GoU, Ugandans in host communities receive limited support for provision of services and infrastructure development. This has caused social tension that may result in Project implementation delays given potential community opposition to the works. To mitigate this tension, the GoU has prioritized development efforts for poor districts hosting refugees while remaining firmly committed to its policy on refugee protection. The Project will manage this risk by designing WSS facilities and catchment management measures that benefit both host communities and refugees and by ensuring that the Project’s social and communication management plan is applied and adequately supervised. There are no known existing risks to refugee protection framework or reputational risks for the Project.

VI. APPRAISAL

A. Economic and Financial (if applicable) Analysis

56. **Value added of Bank's support.** With limited Government funding to the water and environment sector, the Bank’s financing will enable the continuity of WSS service provision and water development efforts in Uganda. On the technical side, the Bank’s engagement relates to supporting Uganda with an integrated and sector wide response to the current water management and development challenges. The Bank’s analytical work and capacity building in water and sanitation service delivery and IWRM will continue to benefit the Government, including on critical elements of water source protection, catchment based planning, and inclusive sanitation management.

57. **The Project’s economic benefits will be generated through expansion of piped water systems, construction of sanitation facilities, and improvements in catchment protection.** Beneficiaries will benefit



from reductions in prices currently paid for water; reductions in time spent fetching water; and overall improvements in health, quality of life, and the environment. The World Bank team conducted a cost-benefit analysis (CBA) for a large sample of interventions under Components 1 and 2 to evaluate the Project's development impact. Investment costs of Components 3 and 4 were added proportionally, given their importance to the successful implementation of the interventions. The CBA also used the shadow price of carbon to value the net greenhouse gas (GHG) emissions generated or reduced by the Project. Assuming a social discount rate of 6 percent²⁹ and a 20-year asset life of the water supply systems, the estimated economic rate of return is 17 percent and the net present value is US\$144 million. Taken individually, each analyzed intervention indicated returns higher than 12.5 percent. The Project's expected return is higher than the 6 percent discount rate, providing a strong rationale for IDA financing for these investments.

58. **A financial evaluation was conducted specifically for the NWSC.** Results from the financial analysis show that overall the NWSC performed well on operational and financial indicators over the last five years. The NWSC achieved reductions in NRW, universal micro-metering, and high revenue collection. Moreover, the NWSC's financial statements show net profit in the range of 3- 10 percent of operating revenues from 2012 to 2016. In the NWSC's service areas, the GoU has a strong policy for setting uniform tariffs that are above the average operating costs and adjust automatically to currency fluctuations. The tariffs are set to cover operational costs, depreciation and some minor investments. The financial projections indicate that the NWSC has the capacity to take over the O&M of the WSS systems in the proposed areas. In some cases, however, small towns that are or will be part of the NWSC's service area have higher than average operating costs. Given this situation, the financial viability of the NWSC depends on (a) the automatic adjustment of tariffs in accordance with the NWSC's total average operating costs and (b) effective and efficient maintaining of operational performance in the new service areas.

59. **A financial evaluation of the UWA model was also conducted utilizing different tariff and operation scenarios in five RGC subprojects.** Results show that if the GoU maintains its current policy of full cost recovery tariffs, the systems will be financially sustainable. Several of the systems will show operating losses in the first years of operation, but these losses will gradually decrease as production increases. By 2025, all the systems will show profits high enough to offset previous losses. The final figures will depend on actual costs and actual tariffs in each of the UWAs. The financial analysis indicates that to ensure the sustainability of works, the UWA guidelines for setting tariffs should stipulate that (a) the tariff must fully cover operating costs and leave a margin of at least 25 percent for better management and investments; (b) tariffs must adjust automatically to cost variations; (c) efficiency gains must be required in operation and revenue collection; and (d) management contracts with mechanisms to ensure compliance must be signed with water scheme operators.

60. **Affordability.** Results also show that the expected tariffs are affordable given that they will be at levels similar to current tariffs. The water bill will correspond to about 5 percent of average household income, and bills will be far lower than prices currently paid to satisfy water needs.

61. **Maximizing the Finance for Development approach.** The financial assessment and the operational performance review indicate that the NWSC has great potential to leverage commercial financing. The NWSC, however, is hesitant to take on additional debt given that its projected cash flow is

²⁹ Recommended in World Bank guidelines for WSS projects.



earmarked for implementing a 10-year capital investment plan, which includes an aggressive program to take over the management of 500 small towns. Under the capital investment plan, the NWSC is committed to finance (a) about 60 percent of the small-town program; (b) implementation of RAPs and network connections for major capital investments financed by DPs; and (c) minor rehabilitation and refurbishment of water systems. The World Bank will provide TA through a Public Private Infrastructure Advisory Facility grant to conduct a pre-feasibility study to further analyze the NWSC's financial situation, potential to sustain commercial financing, and capacity to identify opportunities to crowd in new finance.

B. Technical

62. The Project design represents a technically sensible approach to improve access to WSS systems in the targeted areas. The proposed interventions are based on master plans, which define priority investments and include preliminary feasibility studies and detailed engineering designs (DEDs). The proposed technology, which includes gravity-fed systems (GFS), solar-powered piped water systems, wastewater treatment lagoons, FSTFs, and on-site sanitation facilities for public institutions are considered adequate to achieve drinking water, wastewater effluent, and service delivery standards. The MWE, through a project financed by the AfDB, successfully implemented 35 solar water systems. Under the Project, however, the MWE plans to scale up use of solar panels. To ensure sustainability and adequate implementation of the systems, the MWE will retain the services of an experienced consulting firm to develop technical designs and an operational manual. The firm will also carry out training to ensure that the systems are properly designed and that the key actors (the MWE, service providers, and water committees) have adequate capacity to maintain them. Regarding the FSTFs, it is critical that the Project considers the full sanitation service chain (container, collection and treatment, and disposal/reuse) and analyzes the possibility of clustering with other service areas to bring economies of scale. The Project will prioritize those FSTFs with sound feasibility studies and will invest in sanitation assessments to support future investments in FSTFs.

63. The World Bank team has reviewed and approved detailed designs for the Mbale and Busia small town subprojects. For all other subprojects, experienced consulting firms will conduct feasibility studies and develop detailed designs, which will follow the MWE's engineering design and level of service provision standards. The WSS solutions are expected to be similar to those that the NWSC and the MWE are already implementing in Uganda. The Project will also include a comprehensive review of the current state of sanitation in the targeted areas through the preparation of sanitation plans that assess on-site and centralized fecal sanitation. The regionalization of service delivery through the NWSC and the UWAs is considered adequate, and the Project includes a series of activities to support the strengthening of the UWAs, such as NRW reduction and asset management. The Project will also build on Uganda's good practices and successes, including the use of delegated management contracts, specialized private operators in some cases, and performance-based targets.

64. The Project's approach for the water resources activities is technically sound and consistent with good practice and experience elsewhere in Africa and globally. The watershed management measures are based on sound CMPs that were developed with stakeholder participation and guided by the MWE's Catchment Planning Guidelines. In addition, the Project will incorporate adequate water source identification and protection planning in its water supply system designs through the application of the MWE's Water Source Guidelines. Feasibility studies will also include yield studies to ensure that boreholes and surface water have adequate capacity to withstand long-term water demands. In addition, the Project



will support a comprehensive and widely accessible WIS and a groundwater management tool kit for Uganda. These tools will not only strengthen water resources investment, planning, and management at the catchment level but will also increase access to improved data and related analytical tools that will help the country build its resilience to increased climate variability and improve its capacity for strategic investment and decision making.

65. A high-level screening for climate change and disaster risks was done as per requirements for the Project's three investment components. The identified risks included extreme temperature which will likely trigger an increase in potential evapotranspiration, an increase in the annual variability of precipitation and extreme precipitation events, which in turn are likely to cause floods that can be hazardous to local communities, livestock and hinder agricultural activities. To address these risks, the Project (Components 1, 2, and 3) includes source protection measures such as restoration of riverine vegetation, reforestation, and buffer zone protection that will help reduce effects of flooding and protect the surrounding environment. These practices will also help increase groundwater recharge and ground cover, which reduces evapotranspiration rates and helps conserve water resources. The Project will undertake further consultations with the relevant stakeholders to ensure that the design of the water infrastructure considers the associated risks.

C. Financial Management

66. The MWE has a fully functioning Accounts Department headed by the Assistant Commissioner of Accounts. The MWE has an Internal Audit Unit that includes four internal auditors from the MoFPED. This unit reports to an audit committee at the MoFPED. The Project's activities and transactions implemented by the MWE will be approved and authorized by the MWE's Permanent Secretary who is the Accounting Officer. The main accounts of the MWE are computerized with Integrated Financial Management Systems (IFMS). However, this system is currently only operational for government funds as the project module is not yet fully operational. As a result, project financial reports cannot be generated directly from the IFMS.

67. For the NWSC, the Project's transactions will be managed within the existing set-up of the NWSC. The Managing Director, who is the Accounting Officer, will approve and authorize activities and transactions implemented by NWSC. All transactions will be processed in accordance with the NWSC's policies and procedures. The NWSC has a fully functional Finance and Accounts Department headed by the Deputy Managing Director for Finance and Corporate Strategy. The Accounting Unit of the NWSC is computerized with Iscala accounting systems. The NWSC also has an Internal Audit Department comprising qualified and experienced auditors and an audit committee of the board is in place. The Auditor General will audit the Project's financial statements in accordance with statutory requirements, auditing standards, and suitable terms of reference (ToR).

68. The financial implementation arrangements, which are currently in place under the WMDP, are considered acceptable. Both the MWE and the NWSC have sound internal control procedures in place. However, the following key risks have been identified based on the ongoing WMDP: (a) ministry internal audit review reports are not shared regularly with the World Bank; this is risky given the number of ongoing activities and spread of operations where such reviews give management needed assurance of fiduciary status; (b) the project module of the IFMS has not been fully operationalized at the MWE, which increases the risk of errors and inaccuracy of financial reports; and (c) turnover of qualified and experienced staff is noticed. To ensure that the Project is effectively implemented, the MWE and NWSC



agreed to undertake actions to mitigate the identified risks, including maintaining appropriate staffing arrangements throughout the life of the project. The FM arrangements for the Project have an overall Moderate risk rating.

D. Procurement

69. Procurement under the proposed Project will be conducted in accordance with the World Bank's 'Procurement Regulations for IPF Borrowers' (Procurement Regulations), dated July 2016 and revised in November 2017, under the New Procurement Framework (NPF) and with the World Bank's Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, dated July 1, 2016.

70. **Project Procurement Strategy for Development (PPSD).** To improve Project implementation and to achieve results, the IAs prepared a PPSD and developed a Procurement Plan (PP) based on the PPSD for the first 18 months of Project implementation. A summary of the PPSD is included in Annex 2, Box 2.1 and the risk assessment included below takes in consideration the PPSD's findings.

71. **Procurement capacity risk assessment.** A procurement capacity assessment of the MWE and NWSC undertaken in March and April 2018 established that both agencies have assigned teams to implement the IWMDP. The MWE and the NWSC have recent experience implementing IDA funds through the WMDP. Both IAs demonstrated moderate to acceptable levels of procurement and contract management and staff deployment, but weakness (indicated in key issues in the next paragraph) resulted in multiple amendments during contract implementation resulting in cost and time overruns. The MWE team that initially handled the contract management stage was replaced in November 2017 due to noted weakness. In the MWE, the team assigned to the Project is the same team in charge of contract management for the WMDP, which will have some benefits albeit currently limited experience from the WMDP. The MWE also has a new department (rural) that will be implementing an IDA finance project for the first time. The NWSC team is composed of staff who implemented the WMDP and new technical and procurement staff that have not worked on IDA funded projects before. The necessary risk mitigation measures, capacity building, and procurement systems enhancement measures for Project implementation were agreed upon and included in the PPSD.

72. **The key issues and risks.** The main risks at the MWE and the NWSC are (a) delayed construction and underestimation of the cost of works; (b) incomplete needs assessments and inadequate attention to geotechnical studies leading to design changes/variations during implementation; (c) limited capacity of domestic contractors to conduct projects of this nature, complexity, and scope;³⁰ (d) delays in preparing specifications, statement of requirements, and ToRs by the IAs; (e) Procurement Disposal Unit (PDU) staff requirement of additional training on World Bank Procurement Regulations and Procedures; (f) inefficiency in processing, causing delays at each stage of the procurement cycle; (g) gaps in contract management skills;³¹ and (h) time and cost overruns during contract implementation. In addition, the MWE faces the following risks: (a) limited office space for PDU staff and inadequate storage capacity for procurement records;³² (b) several departments have not implemented IDA projects before; and (c) delays

³⁰ Thus, most of these will be done by international firms.

³¹ Including delays in preparing contract implementation reports and lack of monitoring of vendor's performance.

³² Records stored on top of desks, cupboards, and on the floor.



in paying vendors due to prolonged internal approval processes. Based on the key issues and IA assessment, the Project's procurement risk rating is High.

73. **Risk mitigation measures.** The mitigation measures include (a) detailed designs of up to US\$50 million for works that are already in place and others that are ongoing; (b) geotechnical studies for each of the proposed works and complete needs assessments at the feasibility study stage; (c) packaging to consider capacity of potential contractors, market sounding, as well as multi-modal or wider dissemination of bidding opportunities to elicit participation from capable providers; (d) training to build the capacity of the PDU and departments without earlier experience on World Bank procurement processes; (e) training on International Federation of Consulting Engineers (*Fédération Internationale Des Ingénieurs-Conseils - FIDIC*)³³ contracts and contract management in general; (f) contract management plans to ensure readiness for contract management, including on-site presence; and (g) contracting allowing for more mobilization time. For the MWE, additional mitigation measures include (a) provision of adequate space for record keeping and (b) regular monitoring by management to ensure timely payment to vendors and fluid implementation. The residual risks after the implementation of the mitigation measures is Substantial.

E. Environmental and Social (including Safeguards)

74. The Project is assigned an Environmental Assessment (EA) Category B given that significant adverse environmental and social impacts are not expected due to the nature of the proposed activities. This conclusion was based on a thorough review of specific subprojects (Mbale WSS, Busia WSS, and Gulu Water Supply) and the environmental and social screening of potential subprojects conducted under the ESMF. The anticipated negative impacts are expected to be localized, site-specific, and ranging from small to moderate in scale. For instance, in the Mbale and Busia subprojects (projects with detailed designs), significant impacts are not expected from (a) surface water abstraction on downstream users and ecological biota because minimum environmental flow (EF), as in the case of Namatala River, will be maintained through augmentation of the source and/or reducing the water services to an acceptable level; (b) biosolids generation and treated wastewater discharges on water quality and land degradation; and (c) influx of labor in Project areas. The same nature and scale of impacts are anticipated in Gulu and in other future subprojects. On the Gulu subproject, the assessment concluded that the Gulu intake will not rely on the performance of the Karuma Dam (a large dam currently under construction). The Project is not anticipated to generate any potential large scale, significant and/or irreversible impacts, as none of the planned Project activities will be located in environmentally sensitive areas. All Project negative impacts are expected to be mitigated with known technology, good practices and management solutions that will result in residual impact of minor significance. The Project triggers safeguards policies on Environmental Assessment (OP/BP 4.01), Involuntary Resettlement (OP/BP 4.12), Safety of Dams (OP/BP 4.37), Projects on International Waterways (OP/BP 7.50), Forests (OP/BP 4.36), Natural Habitats (OP/BP 4.04), and Physical Cultural Resources (OP/BP 4.11). See Annex 2 for additional information on project category, safeguards assessment and instruments, and IAs' capacity.

75. **As most of the locations/sites of the subprojects have not yet been identified, the MWE has prepared framework documents in a consultative manner.** These include (a) an ESMF to ensure that a process of identifying, assessing, and mitigating environmental and social impacts is integrated in the

³³ FIDIC is an international standards organization for the consulting engineering and construction.



development of the specific subprojects and (b) an RPF to clarify the principles and legal and institutional procedures for resettlement and rehabilitation to be applied to investments. The ESMF and RPF have been prepared in accordance with the World Bank's Operational Policy on Safeguards, including the World Bank Industry-Specific Water and Sanitation EHS Guidelines and improved requirements on Environmental, Social, Health, and Safety (ESHS) applicable for works contracts, as well as the requirements of the Uganda National Environment Management Authority (NEMA) and National Land Commission. These documents have been consulted upon, approved by the World Bank and disclosed in-country and on the World Bank's external website (ESMF on March 22, 2018 and RPF on March 13, 2018).

76. **The client prepared DEDs and feasibility studies for two subprojects: Mbale WSS (including cluster towns) under Component 2 and Busia WSS under Component 1,** including specific ESIA/Environmental and Social Management Plan (ESMP) and RAP which have been consulted upon and approved by the World Bank. These documents have been consulted upon, approved by the World Bank and disclosed in-country and on the World Bank's external website (Mbale RAP and Busia RAP on April 26, 2018, Mbale ESIA on May 8, 2018, and Busia ESIA on May 3, 2018). For the Mbale subproject, before construction, the NWSC will carry out an Augmented Water Supply Study to evaluate options to augment water source during low flows/dry season for Namatala and assess the reliability of the proposed water supply system.³⁴ The study will include specific recommendations that will be implemented under the IWMDP. Once additional subprojects complete DED/feasibility studies and their locations/sites are identified for financing under the IWMDP, the client will prepare additional site-specific safeguards instruments during implementation, including ESIA, ESMP, RAP, which will be consulted upon, cleared by the World Bank, and then disclosed in-country and on the World Bank's external website before commencement of any civil works.

77. **Management of safeguards issues will be conducted by the two IAs (the MWE and the NWSC).** The IAs will be responsible for ensuring the preparation and implementation of safeguards instruments, as well as overall compliance enforcement of relevant national safeguards regulations and World Bank safeguard policies. Regional entities (WMZs, UWAs, and local governments) will support the IAs in their efforts to implement safeguards measures. The MWE and the NWSC have satisfactorily implemented WSS and water resources management projects with the WMDP and therefore have accumulated extensive experience with respect to implementation of World Bank safeguards procedures. A capacity assessment of the IAs indicates that there are dedicated and qualified staff to carry out safeguards activities, and no additional staff is required. However, the World Bank and the IAs will monitor and assess the need for additional staff during implementation support missions. The MWE and the NWSC will apply existing tools to ensure that construction and supervision contracts include adequate tasks, staffing,³⁵ and budget for safeguards management, including occupational, health, and safety (OHS) aspects. Training programs will be carried out to improve capacity of the IAs and supporting organizations. The Project will use existing platforms, such as the catchment management committees and district WSS coordination committees among others, to engage stakeholders. The ESMF includes a specific section on implementation arrangements and capacity building with a specific training program and budget for the implementation

³⁴ The options will include, among others but not be limited to: (a) construction of a water impoundment structure at the Namatala intake site to store water during high flows and sustain the water demand during the dry spell; (b) construction and rehabilitation of boreholes in the small towns; (c) expansion of Manafwa water supply system, and (d) a reduction in water service delivery at acceptable levels. They are not considered individual solutions, but complementary and inclusive.

³⁵ Contracts will require both the contractor and Supervising Engineer to have a Social Specialist, an Environmental Specialist, and a Health and Safety Specialists on staff on a full-time status.



of safeguards instruments. Project funds will support the hiring of key personnel as well as training and preparation of additional studies.

78. **Gender Analysis (GA).** A Gender Impact Study of the Water and Sanitation Sub-Sector (March 2017), commissioned by the MWE, highlights the socioeconomic impacts of insufficient WSS facilities on women and girls and their livelihoods.³⁶ Women are recognized for their integral role in managing WSS and hygiene in the household and community, as they are the primary users, collectors, transporters, and managers of water. While women are increasingly participating in the decision-making and planning process, more still needs to be done so their participation is mainstreamed and effective in all WSS committees. Women and girls bear the heaviest burden for water collection.³⁷ Long walks to water sources trigger serious social consequences, including GBV, such as sexual assaults of women and girls, physical and verbal abuses of women and children from husbands due to frustration from delays at water sources, and limitations in women's ability to engage in income-generating activities. Women are also affected disproportionately by disease caused by unsafe water sources and poor hygiene practices and the lack of adequate sanitation facilities, which contribute to women's unwillingness to work outside of their homes and girls not attending school for fear of harassments due to the lack of gender-segregated stalls and proper menstrual hygiene management facilities. The Project will address these impacts along with recommendations proposed by the study to alleviate GBV and improve gender mainstreaming.³⁸ For instance, the Project will construct infrastructure, which aims to improve accessibility to WSS, thus reducing the overall distance that women and girls must walk for water collection. The sanitation facilities supported by the Project will be gender segregated in schools and public spaces and will include menstrual hygiene management and handwashing facilities for girls. TA will be provided to the IAs to strengthen their capacity to train UWAs, community-based organizations, and local leaders on mainstreaming gender in O&M of WSS facilities. The Project will also include community sensitization, GBV prevention, and skill development and training activities to women to promote their participation in decision making on WSS issues, supporting GoU's aspiration to achieve the national target of 100 percent of WSS committees with women in key leadership positions. In addition, the Project will support activities to improve gender-specific M&E (for example, percentage WSS committees with women in key positions³⁹).

79. **Labor influx.** The proposed project will apply upmost due diligence in the management and monitoring of labor influx to minimize any potential GBV in Project areas. The amount of labor influx will vary by Project components as in some areas labor influx will be minimal given that the type of work and technology could be supplied by local workforce, while in other areas works might involve labor from outside of project areas. The ESMF includes procedures, institutional responsibilities, and mitigation measures for screening, assessing, and managing issues related to labor influx that will be applied to all site-specific ESIs. Potential preventive measures include (a) sourcing local workforce as much as possible, provided skill sets are met; (b) actively engaging the communities, especially vulnerable groups on the potential arrival of external workers, social conducts and behaviors, and grievance redress mechanisms;

³⁶ A Gender Impact Study of the Water and Sanitation Sub-Sector, March 2017. This report reviewed the MWE's progress in implementation of the Water Sector Gender Strategy over the five-year period of 2010–2015.

³⁷ The report indicates that over 26 percent and 14 percent of households in rural communities and RGCs, respectively, walk over 1–2 km for water collection. In small towns, 24 percent of the households walk between 200 m and 500 m to water sources.

³⁸ The purpose of the gender impact study was to evaluate how well MWE implemented the Water Sector Gender Strategy and to what extent gender has been mainstreamed into the programs at the national and local levels.

³⁹ Key positions in WSS committees are: Chairperson, Vice Chairperson, Secretary, and Treasurer.



(c) including particular conditions in works contract, such as a code of conduct outlining contractor's responsibilities on workplace culture, labor influx management plan, and worker's camp management plan; (d) conducting mandatory training for all employees on legal conduct in local communities and legal consequences for non-compliance and on ethical behavior (for example, not to engage in relationships with underage girls and married women) as well as on issues relating to sexual exploitation and abuse, HIV/AIDS, and sexually transmitted diseases (STDs); (e) maximizing the distance of the camp sites from the communities and providing services and entertainments within the camps; (f) providing opportunities for workers to regularly return to their families; (g) strengthening IAs' capacity on labor influx management; and (h) liaising with Ministry of Gender on community sensitization initiatives and trainings.

80. **Citizen engagement.** The Project will engage participating communities throughout the Project cycle to foster behavior change and sustainability. The MWE's Software Steps (Steps in Implementation of Water and Sanitation Software Activities, 2012)⁴⁰ will allow for systematic application of citizen engagement activities to ensure a sense of ownership and commitment. For instance, the Project will actively empower communities by setting up local supervision committees to provide oversight during construction and after completion. In the refugee settlements and host communities, stakeholder consultations will be conducted with local leaders and community members in collaboration with the OPM and the UNHCR to build consensus on issues and approaches for the Project. Beneficiary satisfaction surveys, including a survey specifically for districts hosting refugees, will be conducted at the Project's start, midterm review, and at completion. Relevant corrective actions will be monitored over the life of the Project. The Project will also establish a grievance redress system dedicated to addressing residents' complaints related to the Project's works.

F. Climate Change Co-Benefits

81. An assessment of climate co-benefits for the Project was conducted for Components 1 to 3. A quantitative analysis was conducted to estimate the Project's impact on GHG emissions and to value the externality using the shadow price of carbon (Annex 4). For each component, GHG emissions were estimated in tCO₂eq using the World Bank Water Global Practice's GHG Accounting Excel Tool. The net emissions of the Project were estimated at -8,124 tCO₂eq. The Project's main contribution to reducing emissions will be through replacing water supply tanker truck use with piped systems in refugee host communities. The installation of gravity-based systems will also reduce net GHG emissions. In addition, the installation of water supply solar systems and other energy efficiency improvement activities, including NRW reductions, will also likely lead to reductions in GHG emissions. A qualitative assessment of the climate mitigation and adaptation co-benefits was also conducted based on the information available for each component. The analysis indicates that the Project has additional measures in place to contribute to the reduction of GHG and to reduce the vulnerability of WSS systems to climate change. The qualitative analysis is included in Annex 2.

⁴⁰ The Software Steps were developed to address the concerns regarding different approaches to awareness creation and community mobilization used in Uganda. They provide guidance on awareness creation, capacity building, and provision of services and follow-up of communities in the water and sanitation sector. There are 19 steps, which are grouped into four phases: (a) general planning and advocacy phase; (b) pre-construction, mobilization, and training phase; (c) construction phase; and (d) post-construction phase. The Software Steps will be included in the ESMPs and Project Implementation Manual.



G. World Bank Grievance Redress

82. 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 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/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.



VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

Project Development Objective(s)

The PDO is to improve access to water supply and sanitation services, integrated water resources management, and operational performance of water and sanitation service providers in Project areas.

PDO Indicators by Objectives / Outcomes	DLI	CRI	Unit of Measure	Baseline	End Target
To improve access to water supply and sanitation services and integrated WRM					
Direct Project Beneficiaries			Number	0.00	1,403,000.00
of which female			Percentage	0.00	51.00
of which refugees			Percentage	0.00	7.00
To improve integrated water resources management;					
Area under integrated water resources management in selected catchments supported by the project			Hectare(Ha)	0.00	47,209.00
To improve the operational performance of water and sanitation service providers					
Percent of the service areas achieve cost recovery ratio of 1.1 under the project			Percentage	38.00	80.00
To improve access to water supply and sanitation services					
People provided with access to improved water sources		Yes	Number	0.00	1,151,862.00
People provided with access to improved water sources - Female (RMS requirement)		Yes	Number	0.00	587,450.00



PDO Indicators by Objectives / Outcomes	DLI	CRI	Unit of Measure	Baseline	End Target
of which refugees			Number	0.00	98,886.00
of which citizens in host communities			Number	0.00	173,212.00
People provided with access to improved sanitation services		Yes	Number	0.00	294,489.00
People provided with access to improved sanitation services - Female (RMS requirement)		Yes	Number	0.00	150,189.00
of which refugees			Number	0.00	21,087.00
of which citizens in host communities			Number	0.00	47,136.00

Intermediate Results Indicators by Components	DLI	CRI	Unit of Measure	Baseline	End Target
WSS in Small Towns, RGCs, Large Towns & Support to Districts Hosting Refugees (Components 1&2)					
Piped household water connections (constructed or rehabilitated) resulting from the project interventions			Number	0.00	88,129.00
Improved community water points (constructed or rehabilitated) under the project			Number	0.00	7,780.00
Percent of water and sanitation committees with women in key position in project areas			Percentage	84.00	95.00
People within 200m (0.2km) of an improved water source benefitted in refugees hosting districts			Percentage	0.00	70.00



of which women		Percentage	0.00	51.00
New sewerage connections resulting from the project interventions		Number	0.00	384.00
Number of service areas that reduce NRW to 20% under the project		Number	3.00	10.00
Customer satisfaction Index for services supported under the project		Percentage	0.00	85.00
Selected service providers achieve > 80 percent in collection efficiency under the project		Number	3.00	6.00
Volume of BOD pollution loads removed by treatment plants as result of project interventions (Tons per year)		Number	221.00	352.00
Water Resource Management (Component 3)				
Catchment and source protection plans developed		Number	5.00	16.00
National Water information systems established and operationalized under the project		Number	0.00	1.00
State of water resources reports produced to inform decision making		Number	0.00	3.00



Monitoring & Evaluation Plan: PDO Indicators	
Indicator Name	Direct Project Beneficiaries
Definition/Description	Beneficiaries are people or groups who directly receive benefits from interventions of the project (water supply, sanitation, and WRM related investments).
Frequency	Bi-annually
Data Source	Primary sources include: MWE M&E system, NWSC Area performance reports, Refugee Database and UPMiS. Secondary sources include: MWE/DWD/DWRM progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE and NWSC
Indicator Name	of which female
Definition/Description	Beneficiaries are people or groups who directly receive benefits from interventions of the project (water supply, sanitation, and WRM related investments).
Frequency	Bi-annually
Data Source	MWE/DWD/DWRM progress reports, annual water & environments sector performance report, Water Supply Atlas (database of water supply, functionality and distribution of all Uganda districts), NWSC annual report and refugee database.
Methodology for Data Collection	
Responsibility for Data Collection	MWE and NWSC



Indicator Name	of which refugees
Definition/Description	Beneficiaries are people or groups who directly receive benefits from interventions of the project (water supply, sanitation, and WRM related investments).
Frequency	MWE and NWSC
Data Source	MWE/DWD/DWRM progress reports, annual water & environments sector performance report, Water Supply Atlas (database of water supply, functionality and distribution of all Uganda districts), NWSC annual report and refugee database.
Methodology for Data Collection	
Responsibility for Data Collection	Bi-annually
Indicator Name	Area under integrated water resources management in selected catchments supported by the project
Definition/Description	Area is referred to the land under integrate water management measures. Areas include but not limited to farms, river banks, catchments / micro catchments, intakes, etc. Measures include soil and water conservation, flood protection, afforestation, and livelihood improvement schemes as per agreed in CMPs.
Frequency	Bi-annually
Data Source	Primary sources include: National Water Information System database, GIS Mapping and MWE M&E system. Secondary sources include: MWE/DWRM progress reports and annual water & environment.
Methodology for Data Collection	
Responsibility for Data Collection	MWE and DWRM



Indicator Name	Percent of the service areas achieve cost recovery ratio of 1.1 under the project
Definition/Description	Percent of service areas supported by the project that achieve cost recovery ratio of 1.1. Cost recovery ratio is the revenues collected over operating expenses for selected service areas under the project. Baseline was derived from the existing service areas that have been gazetted: Gulu, Mbale, Adjumani, Busia, Namasale, Kyegegwa-Mpara-Ruyonza, Namungalwe-Kaliro and Budaka-Kadama-Tirinyi-Kibuku-Butaleja-Busolwe.
Frequency	Bi-annually
Data Source	Primary sources include: MWE M&E system, NWSC Accounting System (SCALA), Refugee Database and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE/DWD Rural and Urban/NWSC



Indicator Name	People provided with access to improved water sources
Definition/Description	
Frequency	Bi-annually
Data Source	Primary sources include: MWE M&E system, NWSC Area performance reports, Refugee Database, Refugees GIS Mapping for WASH and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE and NWSC
Indicator Name	People provided with access to improved water sources - Female (RMS requirement)
Definition/Description	
Frequency	Bi-annually.
Data Source	MWE M&E system, NWSC Area performance reports, Refugee Database, Refugees GIS Mapping for WASH and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE and NWSC



Indicator Name	of which refugees
Definition/Description	People who benefitted from improved water supply services that have been constructed or rehabilitated under the project. Per UNICEF-WHO Joint Monitoring Program definition, “improved water sources” include piped household connection (house or yard connections), public standpipe, boreholes, protected dug well, protected spring and rainwater collection, and do not include unprotected well, unprotected spring, surface water (river, pond, dam, lake, stream, irrigation channel), or bottled water.
Frequency	Bi-annually.
Data Source	MWE M&E system, NWSC Area performance reports, Refugee Database, Refugees GIS Mapping for WASH and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MEW / NWSC.



Indicator Name	of which citizens in host communities
Definition/Description	People who benefitted from improved water supply services that have been constructed or rehabilitated under the project. Per UNICEF-WHO Joint Monitoring Program definition, “improved water sources” include piped household connection (house or yard connections), public standpipe, boreholes, protected dug well, protected spring and rainwater collection, and do not include unprotected well, unprotected spring, surface water (river, pond, dam, lake, stream, irrigation channel), or bottled water.
Frequency	Bi-annually.
Data Source	MWE M&E system, NWSC Area performance reports, Refugee Database, Refugees GIS Mapping for WASH and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE / NWSC.



Indicator Name	People provided with access to improved sanitation services
Definition/Description	
Frequency	Bi-annually
Data Source	Primary sources include: MWE M&E system, NWSC Area performance reports, Refugee Database, Refugees GIS Mapping for WASH and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE and NWSC
Indicator Name	People provided with access to improved sanitation services - Female (RMS requirement)
Definition/Description	
Frequency	Bi-annually.
Data Source	MWE M&E system, NWSC Area performance reports, Refugee Database, Refugees GIS Mapping for WASH and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE and NWSC.



Indicator Name	of which refugees
Definition/Description	People benefitted from improved sanitation facilities that have been constructed or rehabilitated under the project, including: pit latrine with slab, ventilated improved pit (VIP) latrine, composting toilet, and flush or pour-flush toilet/latrine to piped sewer system and septic tank, and fecal sludge treatment plants. It also includes shared sanitation facilities built in institutions and public places.
Frequency	Bi-annually.
Data Source	Primary sources include: MWE M&E system, NWSC Area performance reports, Refugee Database, Refugees GIS Mapping for WASH and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE / NWSC.



Indicator Name	of which citizens in host communities
Definition/Description	People benefitted from improved sanitation facilities that have been constructed or rehabilitated under the project, including: pit latrine with slab, ventilated improved pit (VIP) latrine, composting toilet, and flush or pour-flush toilet/latrine to piped sewer system and septic tank, and fecal sludge treatment plants. It also includes shared sanitation facilities built in institutions and public places.
Frequency	Bi-annually.
Data Source	Primary sources include: MWE M&E system, NWSC Area performance reports, Refugee Database, Refugees GIS Mapping for WASH and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE / NWSC.



Monitoring & Evaluation Plan: Intermediate Results Indicators	
Indicator Name	Piped household water connections (constructed or rehabilitated) resulting from the project interventions
Definition/Description	Piped household water connection is defined as a connection that provides piped water to the consumer through either a house or yard connection. It does not include, inter alia, standpipes, protected well, borehole, protected spring, piped water provided through tanker trucks, or vendors, unprotected wells, unprotected spring, rivers, ponds and other surface water bodies, or bottled water.
Frequency	Bi-annually
Data Source	Primary sources include: MWE M&E system, NWSC Area performance reports, Refugee Database, Refugees GIS Mapping for WASH and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE/DWD Rural and Urban/NWSC



Indicator Name	Improved community water points (constructed or rehabilitated) under the project
Definition/Description	Number of improved community water points constructed or rehabilitated under the project. A community water point is defined as a public outlet for the provision of water supply to a number of households. Improved community water points refer to standpipes, protected dug well, borehole, or protected spring. It does not include, inter alia, unprotected wells or unprotected springs..
Frequency	Bi-annually
Data Source	Primary sources include: MWE M&E system, NWSC tracking tools, Refugee Database and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE/NWSC
Indicator Name	Percent of water and sanitations committees with women in key position in project areas
Definition/Description	Women holding at least one key position in water user committees for influencing or making decisions on WSS related matters. The key positions are: Chairperson, Vice Chairperson, Secretary and Treasurer.
Frequency	Bi-annually
Data Source	Primary sources include: MWE M&E system, NWSC tracking tools, Refugee Database and UPMiS. Secondary sources include: MWE/DWD progress reports, annual water and environments sector performance report and NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE/DWD Rural, Urban, WRM /NWSC



Indicator Name	People within 200m (0.2km) of an improved water source benefitted in refugees hosting districts
Definition/Description	Percent of refugees and citizens in host communities that have an improved water source within 200m of walking distance.
Frequency	Bi-annually
Data Source	Primary sources include: MWE national M&E system, Refugee Database, Refugees GIS Mapping for WASH, Water Supply Atlas, and UPMiS. Secondary sources include: MWE/DWD/DWRM progress reports, annual water & environments sector performance report, NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE/DWD Rural
Indicator Name	of which women
Definition/Description	
Frequency	Bi-annually.
Data Source	Primary sources include: MWE national M&E system, Refugee Database, Refugees GIS Mapping for WASH, Water Supply Atlas, and UPMiS. Secondary sources include: MWE/DWD/DWRM progress reports, annual water & environments sector performance report, NWSC annual report.
Methodology for Data Collection	
Responsibility for Data Collection	MWE/DWD Rural.



Indicator Name	New sewerage connections resulting from the project interventions
Definition/Description	Number of new sewer connections resulted from the project.
Frequency	Bi-annually
Data Source	Primary sources include: MWE national M&E system and NWSC performance report and NWSC annual report
Methodology for Data Collection	
Responsibility for Data Collection	NWSC
Indicator Name	Number of service areas that reduce NRW to 20% under the project
Definition/Description	NRW is defined as the percentage of water produced that is not ultimately billed to consumers. Water not billed to consumers results from water losses (physical and commercial losses) as well as authorized consumption that are not billed.
Frequency	Bi-annually
Data Source	MWE / NWSC progress reports, annual water and environment sector performance reports, and water supply and utility databases..
Methodology for Data Collection	
Responsibility for Data Collection	MWE/NWSC



Indicator Name	Customer satisfaction Index for services supported under the project
Definition/Description	Percentage of surveyed customer/citizen that are satisfied with the services
Frequency	Annually
Data Source	MWE / NWSC progress reports, annual water and environment sector performance reports, and water supply and utility databases..
Methodology for Data Collection	
Responsibility for Data Collection	MWE / NWSC
Indicator Name	Selected service providers achieve > 80 percent in collection efficiency under the project
Definition/Description	Number of the service providers that achieve 80 percent or greater in collection efficiency. Collection efficiency is revenue collected over billed for the selected water service providers at the national and local levels under the project.
Frequency	Bi-annually
Data Source	MWE / NWSC/ MWE progress reports, annual water and environment sector performance reports, and water supply and utility databases.
Methodology for Data Collection	
Responsibility for Data Collection	MWE / NWSC



Indicator Name	Volume of BOD pollution loads removed by treatment plants as result of project interventions (Tons per year)
Definition/Description	This indicator measures the cumulative volume (mass) of Biological Oxygen Demand (BOD) pollution loads removed by the treatment plant supported under the project. Project support may include construction, expansion or rehabilitation of the treatment plant.
Frequency	Bi-annually
Data Source	NWSC performance report and NWSC annual report
Methodology for Data Collection	
Responsibility for Data Collection	NWSC
Indicator Name	Catchment and source protection plans developed
Definition/Description	Plans developed to enhance catchment management and source protection measures (e.g., soil and water conservation, river banks protection and restoration, etc.) in the selected water management zones.
Frequency	Bi-annually
Data Source	MWE / DWRM progress reports, annual water and environment sector performance reports, and water supply, utility and \refugee databases.
Methodology for Data Collection	
Responsibility for Data Collection	MWE /DWDRM / DRD Rural



Indicator Name	National Water information systems established and operationalized under the project
Definition/Description	National water information systems established to track water data. Operationalized is defined as the systems are functional for data collection, monitoring and reporting.
Frequency	Bi-annually
Data Source	MWE/DWRM progress reports, annual Water & environment sector performance report and Water Supply Atlas.
Methodology for Data Collection	
Responsibility for Data Collection	MWE and DWRM
Indicator Name	State of water resources reports produced to inform decision making
Definition/Description	State of water resources management reports developed to inform decision making.
Frequency	Every two years
Data Source	MWE / DWRM Annual reports, annual water and environment sector performance reports.
Methodology for Data Collection	
Responsibility for Data Collection	MWE /DWDRM



ANNEX 1: DETAILED PROJECT DESCRIPTION

1. **The Project will focus on three strategic areas:** (a) strengthening WSS infrastructure and catchment management measures in targeted areas; (b) supporting water-related institutions (NWSC, MWE, local government, and service providers) in their efforts to establish and improve operational efficiency and service quality in small towns and rural areas; and (c) strengthening national and regional capacity to improve IWRM.

2. **The Project’s implementation approach** will consider spatial differences between rural, small towns, and urban large towns. It will also ensure that citizen engagement strategies, gender approaches, and sanitation and hygiene campaigns are included to foster behavioral change and ownership among the population. To ensure sustainability and increase resilience to climatic variability, the Project will integrate WSS infrastructure investments with water source and catchment protection measures, comprehensive sanitation planning, and service delivery support.

3. **Selection criteria.** The selection of Project areas was based on consultations with key stakeholders, the CPF, the MWE’s Sector Development Plan, and the NWSC’s Capital Improvement Plan, as well as the potential to carry over subprojects from the WMDP. A summary of the selected service areas and the corresponding selection criteria are included in Table 1.1.

Table 1.1. Summary of Selection Criteria Per Component

Components	Selected Service Areas	Selection Criteria
Component 1: WSS in Small Towns and RGCs and Support to Districts Hosting Refugees		
WSS in Small Towns	<ul style="list-style-type: none"> • Busia • Mbale Small Towns (Budaka, Busolwe, Butaleja, Kadama, and Tirinyi) • Namungalwe-Kaliro • Kyegegwa-Mpara-Ruyonza • Namasale 	<ul style="list-style-type: none"> • Subproject included in the WMDP (Busia and Mable Small Towns) • Priority to the Northern and Eastern regions given socioeconomic indicators; linked to the NDP II equity strategy • Readiness - availability of master plans, feasibility studies, and/or DED (Busia and Mbale Small Towns) • Clear service delivery model • Reasonable per capita investment cost (less than US\$150 per capita) with the opportunity to leverage economies of scale by including other small towns (cluster approach)
Support to RGCs	<ul style="list-style-type: none"> • Kasese RGC cluster: Kyarumba, Kyondo, Lake Katwe, and Kisinga • Bitsya -Kurungu • About 30 RGCs located in 20 districts - solar-powered piped water schemes 	<ul style="list-style-type: none"> • District with high number of cholera cases and low water coverage • Readiness - availability of master plan and preliminary feasibility studies; adequate source of water identified • Clear service delivery model identified • RGCs with access to safe water below 40 percent (Central and Western Regions) - criteria for solar-powered piped water schemes



Components	Selected Service Areas	Selection Criteria
Support to Districts Hosting Refugees	<ul style="list-style-type: none"> Yumbe, Arua, Adjumani, Moyo, Lamwo, and Kiryandongo 	<ul style="list-style-type: none"> Districts hosting refugees located in the West Nile and Northern Region; Kiryandongo in the Mid-west selected due to large daily inflows of refugees from South Sudan. Subcounties of host districts with access to safe water below 67 percent Water stress - host districts require bulk water transfer from other areas Clear service delivery model identified
Component 2: WSS in Large Towns and Support to Districts Hosting Refugee		
WSS in large towns	<ul style="list-style-type: none"> Mbale Municipality Gulu Municipality and nearby towns 	<ul style="list-style-type: none"> Priority municipalities to support regional economy in the Northern (Gulu) and Eastern (Mbale) regions Adequate service delivery model with the NWSC; investments are part of the NWSC capital improvement program Readiness - detailed design approved for Mbale and feasibility study for Gulu under way
Support to Districts Hosting Refugees	<ul style="list-style-type: none"> Adjumani Town 	<ul style="list-style-type: none"> Adequate service delivery model with the NWSC; investments are part of the NWSC capital improvement program High operating cost; need to reduce cost to improve sustainability.
Component 3: Water Resources Management		
Catchment management measures	<ul style="list-style-type: none"> Four sub-catchments - Upper Nile WMZ (Kochi and Aswa II sub-catchments) and Kyoga WMZ (Lwakhakha and Awoja sub-catchments) 	<ul style="list-style-type: none"> Sub-catchments linked with WSS infrastructure investments under the IWMDP and the WMDP CMPs developed and approved under the WMDP and prioritized as hot spots
Water resources strategy	<ul style="list-style-type: none"> Albert WMZ 	<ul style="list-style-type: none"> Important zone because of oil exploration and environmental degradation
CMPs	<ul style="list-style-type: none"> Nyamugasani and Kafu catchments in Albert WMZ and Sezibwa and Okweng in Kyoga WMZ) 	<ul style="list-style-type: none"> Sub-catchments identified as hot spots; proposed rural water investments located in several of these sub-catchments
WIS information and groundwater study	<ul style="list-style-type: none"> National 	<ul style="list-style-type: none"> WIS design supported under the WMDP Groundwater assessment and guidelines needed to support selection of sites for borehole drilling

4. **Service areas.** Large towns (municipality), small towns, and RGCs are terms used to describe the various service areas supported by the Project. For the Project, the following definitions are used:

- **Large towns.** These comprise cities and municipalities defined as urban centers by the Uganda Bureau of Statistics (UBOS) National Population and Housing Census (NPHC). Urban centers include all areas appointed as city, municipality, or town council by the UBOS. The NWSC is responsible for managing



WSS service in large towns. The Project will benefit three large towns / municipalities: Gulu, Mbale, and Adjumani.

- **Small towns.** The MWE describes small towns as urban centers with a population of 5,000–15,000. The Project will benefit small towns including Busia, Budaka, Busolwe, Butaleja, Kadama, Tirinyi, Kyegegwa, Mpara, Ruyonza, Kaliro, Namungalwe and Namasale. The MWE is responsible for developing small town WSS with management either delegated to local authorities, the NWSC or UWAs.
- **RGCs.** The RWSS sub-sector covers all rural communities with a population up to 5,000. The RWSS sub-sector categorizes rural communities as either villages, which have a population up to 1,500, or RGCs, which have a population between 1,500 and 5,000. Local authority management of rural water systems is either through a community-based management system model or a small town model. The Project will focus on RGCs that will be managed by the UWAs.

5. **Project components.** The proposed IWMDP will comprise the following four components.

Component 1: Water Supply and Sanitation in Small Towns and Rural Growth Centers and Support to Districts Hosting Refugees (US\$161.5 million, of which national IDA US\$114.5 million, IDA 18 Sub-Window for Refugees and Host Communities US\$43.0 million, and counterpart funds US\$4.0 million)

Subcomponent 1.1: Support to Small Towns and Rural Growth Centers

6. This subcomponent will support activities to improve WSS in selected small towns and RGCs⁴¹ in the Recipient's territory. Activities consist of (a) constructing and rehabilitating WSS facilities, as well as providing associated services, including engineering, environmental and social studies, and supervision of construction activities; (b) preparing and implementing sanitation plans in selected small towns; (c) strengthening the capacity of selected UWAs⁴² in the areas of operational and financial management, including the establishment of a remote monitoring system for rural water systems; and (d) carrying out environmental and social management-related activities to protect water sources and sensitize communities.

Subcomponent 1.2: Support to Districts Hosting Refugees

7. This subcomponent will support activities to improve WSS in selected districts hosting refugees. Activities consist of (a) constructing and rehabilitating WSS facilities, as well as providing associated services, including engineering, environmental and social studies, and supervision of construction activities; (b) preparing and implementing of sanitation plans; (c) strengthening the capacity of selected UWAs in the areas of operational and financial management, including the establishment of a remote monitoring system for rural water systems; (d) carrying out environmental and social management-related activities to (i) protect water sources and sensitize communities; and (ii) address the specific needs

⁴¹ Small towns mean any of the following areas of the Recipient's territory: Busia, Namungalwe-Kaliro, Kyegegwa-Mpara-Ruyonza, Namasale, and Butaleja- Busolwe and Budaka - Kadama-Tirinyi-Kibuku. RGCs means any of the following areas: Kasese cluster (Kyarumba, Kyondo, Lake Katwe, and Kisinga); Bitsya -Kurungu; and 30 RGCs benefiting from solar-powered piped water systems.

⁴² Selected UWA refer to five regional UWA (Northern, Midwestern, Southwestern, Central, and Eastern) appointed as the water authorities in charge of specific water and sanitation service areas as gazetted by the MWE on July 14, 2017 (The Uganda Gazette, Volume CX No. 39).



of host communities and refugees; and (e) strengthening the capacity of the MWE to develop and carry out WSS sector policies and programs that promote more sustainable and efficient service delivery at refugee settlements.

8. This subcomponent will take a long-term and systematic approach to WSS service delivery at the district level while addressing some immediate needs at the community level. This approach is aligned with the GoU and UNHCR’s approach to shift from a humanitarian aid response to a development one. The subcomponent will include complementary water source management and catchment protection measures to support districts hosting refugees build their resilience and capacity to respond to water-related shocks. Depending on their location, refugee settlements will be served either through individual water systems or by water extension networks from the town/RGC systems. This will greatly reduce water trucking to the settlements and will provide cheaper and more reliable safe water to refugees. In addition, the investments will improve overall infrastructure and water supply needs in the host communities.

Beneficiaries

9. The combined population expected to benefit from Component 1 is approximately 856,000 people. The population will benefit from improved and increased coverage of WSS services, which in turn will increase the availability of safe drinking water, reduce the distance to safe WSS systems and water collection time, and improve sanitary conditions at the household and community levels. Furthermore, service providers (the UWAs and the NWSC) that receive support under the Project and their staff will benefit from TA and investments focused on improving their performance. Table 1.2 lists the small towns, RGCs, and service providers under Component 1.

Table 1.2. Small Towns, RGCs, and Service Providers under Component 1

Subcomponent	Region	Service Area	Population	Service Provider
Small urban towns	Eastern	Busia	103,390	NWSC
	Eastern	Namungalwe-Kaliro	55,900	NWSC
	Eastern	Mbale Small Towns		NWSC
	Western	Kyegegwa-Mpara-Ruyonza	43,000	Midwestern UWA
		FSTF small towns	103,863	
	Northern	Namasale	43,000	Northern UWA
RGCs	Western	Kasese cluster (Kyarumba, Kyondo, Lake Katwe, and Kisinga)	36,204	Midwestern UWA
	Western	Bitsya -Kurungu		Southwestern UWA
	Central/Mid - Western and Mid-Eastern subregions	32 RGCs located in 20 districts - solar-powered piped water schemes	77,236	Midwestern UWA Central UWA Eastern UWA
Districts Hosting Refugees	Northern	Yumbe, Arua, Adjumani, Moyo, and Lamwo	393,142	Northern UWA
		Kiryandongo		Midwestern UWA



Proposed Activities

10. **Water supply investments.** Investments include piped water supply schemes either fed by surface water (river/lakes) or high-yield boreholes.

11. For surface water systems, activities include (a) construction of new surface water intake structures; (b) construction of new Water Treatment Plants (WTPs); and (c) construction and rehabilitation of transmission and distribution systems. The transmission and distribution systems will include water mains, reservoirs, and distribution networks; water connections; macro and micro metering; and pressure monitoring systems. The preference is to maximize gravity flow within the systems to reduce energy costs.

12. For high-yield boreholes, the MWE is introducing solar-powered water supply schemes to eliminate long queues and supply more people at each source. The scheme comprises a borehole equipped with a solar-powered submersible pump; storage; and a distribution pipe network (including public stands, household connections, and meters). The capital cost is high but is balanced by the benefits of reduced O&M costs over the life span of the systems. The water supply systems planned under this Project include borehole yields of greater than 5 m³/h and aim to serve populations between 1,500 and 5,000 in RGCs.⁴³ The approach targets areas that have limited surface water resources but have good groundwater potential as per groundwater assessments and have limited access to the electricity grid. The targeted RGCs have water access levels below 40 percent compared to the national average of 67 percent coverage in the rural areas.

13. **Sanitation.** The Project will finance institutional sanitation facilities at markets, health posts, and schools in the Project areas. The benefiting schools are selected based on pupil-stance ratios over 70, as well as committed school management and administrative teams.⁴⁴ Other benefiting public places will be determined by the condition of the structure, availability of land, number of intended users, and the local government's development plan for the specific area. The component will support the establishment of proper fecal sludge management systems in small towns that include collection, treatment, reuse and disposal, including the construction of FSTFs. The first phase of sanitation-focused investment will include the construction of FSTFs in the small towns of Busia, Koboko, Moyo and Ngora as well as Rukungiri Municipality based on high demand, improved fecal sludge management, and clustering opportunities with other towns. TA will be provided to targeted small towns to develop sanitation plans. Finally, the Project will support sanitation and hygiene promotion activities, including the application of CLTS for mobilizing communities to eliminate open defecation and for sanitation marketing to change behaviors and to scale up effective and sustainable demand and supply for improved sanitation and hygiene by using social and commercial marketing practices. Sanitation and hygiene promotion activities applied to the Project will follow specific steps and guidelines included in the MWE's Hygiene Education and Sanitation Promotion Template.

14. **Support to service providers.** The component will support an overall utility assessment and business plan for each of the participating UWAs. The plans will focus on NRW, commercial operations,

⁴³ The MWE supports three categories: Mini (yield 1–3 m³/h), Medium (yield 3–5 m³/h), and Large (>5 m³/h) solar-powered water systems.

⁴⁴ A pupil-stance ratio of 40 is considered a national average.



and asset management. The Project will finance specific activities derived from the business plans that are aimed at achieving financial viability. The Project proposes to deliver this support to the UWAs through professionalization contracts under which a private firm would be contracted to help the UWAs implement and assimilate standard operating procedures and systems (for network, commercial, administrative, and FM). The Project will also support data collection and reporting, including remote monitoring systems for solar-powered piped water schemes, which will allow centralized monitoring of the functionality and operational efficiency of the systems, as well as overall utility performance monitoring under the UPMIS. Given that the NWSC has a good track record and solid utility management practices, the Project will focus on operationalizing the MWE's guidelines for transferring small towns to the NWSC. The Project will support the application of community mobilization activities to ensure that the communities and local authorities are informed on the new service delivery model.

15. **Environmental and social management.** The Project will finance activities included in the safeguards instruments (ESMPs and RAPs). Although also included in the safeguards documents, it is important to highlight the following themes: water source protection, community mobilization and sensitization, and cross-cutting activities, such as mainstreaming gender and HIV prevention activities.

16. Catchment/water source protection activities will be carried out in all water supply systems financed by the Project to ensure that the quantity and quality of water provided by the respective water sources does not deteriorate in the future. Activities will be derived from catchment/water source protections plans that have been prepared under the WMDP or will be prepared as part of the ESIA's under the IWMDP. The plans include the following objectives: (a) to secure the land in the immediate catchment areas of the water sources; (b) to implement appropriate catchment management measures to ensure the integrity and security of the water sources; and (c) to support the communities in the nearby catchment areas to carry out environmentally friendly livelihood activities, such as practicing modern land use management and agroforestry farming practices.

17. The main activities will include the following:

- Planning: Catchment assessments will delineate the catchments and establish baseline conditions. Site-specific water source and catchment protection plans will be developed and implemented for every water supply system in accordance with the MWE's Framework and Guidelines for Water Source Protection (2012).
- Water source protection activities will be undertaken by the contractors for each water supply system. Activities include fencing/marketing of buffer zones, planting appropriate grass and tree species, and creating diversion channels for storm water management.
- Education and sensitization activities to promote friendly livelihood activities, including training women and youth groups on tree nursery development.
- Conducting regular environmental monitoring and inspection to ensure compliance.

18. **Community mobilization and sensitization.** All Project investments will be accompanied by a community participatory approach throughout the Project cycle—identification/preparation, execution, and operation—to foster behavior change and sustainability. These activities will be guided by the MWE's



Software Steps (Steps in Implementation of Water and Sanitation Software Activities, 2012). The steps provide guidance on awareness creation, capacity building, service provision, and follow-up. There are 19 steps, which are grouped into four phases: (a) the general planning and advocacy phase; (b) the pre-construction, mobilization, and training phase; (c) the construction phase; and (d) the post-construction phase. The Software Steps will be included in the ESMPs and the Project Implementation Manual.

19. **Cross-cutting activities.** The Project will enhance the capacity for gender mainstreaming in the WSS sector by supporting the implementation of guidelines for the integration of gender in water programs and activities, as well as improving the M&E system to be more gender responsive in line with the MWE's Water and Sanitation Gender Mainstreaming Strategy. Furthermore, the Project will support mainstreaming of HIV/AIDS prevention in the sector at the local government levels. The Project will be guided by the Water Sector HIV/AIDS Strategy. HIV/AIDS prevention can be mainstreamed through incorporating HIV/AIDS prevention and safe sex messages into community sensitization and training activities. Likewise, contractors should be informed about HIV/AIDS prevention to influence their behavior in the communities where they operate. HIV/AIDS-related activities will be budgeted for and included in the ESMP.

Implementation

20. Component 1 will be implemented by the MWE's UWSSD and RWSSD and its regional offices in coordination with the NWSC and local authorities. The refugee host community subcomponent will be implemented by the MWE in close consultation with other key stakeholders, such as the OPM, the UNHCR, and local authorities. DED and biddings documents have been completed for the Busia WSS subproject. With the support of the WMDP and counterpart funds, the MWE has engaged (or is in the process of engaging) consultancies to develop feasibility studies, detailed designs, and safeguards documents for most of the proposed activities under this component. For some sanitation and water supply investments, studies will be financed during the first phase of Project implementation. The Project will also support construction supervision to oversee and provide quality control of the detailed designs and overall construction, including compliance with environmental and social safeguards.

Component 2: WSS Water Supply and Sanitation in Large Towns and Support to Districts Hosting Refugees (US\$120.5 million of which national IDA US\$77.5 million, IDA 18 Sub-Window for Refugees and Host Communities US\$15.0 million, counterpart funds US\$3.0 million, and KfW US\$25.0 million)

Subcomponent 2.1: Water Supply and Sanitation in Large Towns

21. This component will directly support the GoU's growth strategy to revitalize Uganda's Eastern and Northern regions. This component will finance activities designed to improve WSS services in the municipalities of Mbale (Eastern region) and Gulu (Northern region) as well as nearby small towns. Activities consist of (a) constructing and rehabilitating WSS infrastructure in the municipality of Mbale; (b) constructing water supply system for the municipality of Gulu; (c) undertaking construction supervision activities and engineering and environmental studies, including the Augmented Water Supply Study; (d) strengthening the capacity of the NWSC in the areas of operational and financial management to support improved performance in the project-supported areas; and (e) carrying out environmental and social management-related activities with a view to protecting water sources and sensitizing communities. The component will also support mitigation measures to ensure adequate implementation and O&M of the



infrastructure investments. The investments will improve Gulu and Mbale's resilience to floods and droughts.

22. Mbale municipality WSS subproject. This subproject will finance (a) catchment management measures for protecting the current water sources at Nabijo and Nabuyonga rivers and at the new Namatala intake; (b) construction of a new intake and water mains at Namatala; (c) rehabilitation and expansion of the WTPs at Bungokho and Manafwa; (d) rehabilitation and expansion of water mains and distribution networks, including storage capacity, metering, and water connections; and (e) rehabilitation and expansion of the Mbale town sewerage system. The Mbale bulk water system will supply water to the Mbale small towns included under Component 1: Butaleja-Busolwe and Budaka-Kadama-Tirinyi-Kibuku. This subproject will also include community mobilization and sensitization and cross-cutting activities as described in Component 1 as well as consultancy services for construction supervision and engineering support.

23. Gulu water supply subproject. The Gulu water supply subproject is part of the Integrated Program to Improve the Living Conditions (IPILC) in Gulu, which aims to invest in basic infrastructure to support the GoU's national objective of revitalizing Gulu's economy. A feasibility study conducted under the IPILC recommended a new water supply system using the Nile River to ensure water production capacity to meet 2040 water demands. The Gulu water supply subproject includes the construction of a new intake structure at the Nile River, a WTP, a pump station, a 70 km transmission pipeline from Karuma to Gulu and distribution systems, including reservoirs, metering, and public standpipes and household connections. The Project will also include installation of branch-off systems to connect six small towns to the Gulu water supply subproject, as well as improvements to the small-town distribution network. The cost estimate for the Gulu water supply subproject is budgeted at US\$55 million, and it will include financing from the KfW Development Bank. The World Bank will finance the Karuma-Gulu transmission pipeline, improvements to the Gulu distribution networks, source protection activities and improvements to the small-town water supply networks for an estimated amount of US\$28.75 million. The KfW will finance the water intake and WTP for an estimated amount of US\$25 million. The GoU will contribute an estimated amount of US\$1.4 million to cover RAP-related compensations. Both the KfW and the World Bank will follow Uganda and World Bank safeguards guidelines. Sanitation investments are not included under the Project as they are already covered and financed under the overall IPILC.

Subcomponent 2.2: Support to Districts Hosting Refugees

24. This subcomponent will support activities to improve WSS in Adjumani Town.⁴⁵ The activities consist of: (a) constructing and rehabilitating WSS facilities, as well as providing associated services, including engineering, environmental and social studies and supervision of construction activities; (b) preparing and implementing of sanitation plans; and (c) carrying out environmental and social management related activities to protect water sources and sensitize communities.

Implementation

The NWSC through its P&CDD is responsible for managing the WSS system in Mbale Municipality, Gulu Municipality, and Adjumani Town; therefore, this component will be implemented by the NWSC in close

⁴⁵ Adjumani District" means the towns of Adjumani, Pakele, Ciforo and Dzaipi, as well as the parishes of Agojo and Mungula.



coordination with the MWE and local authorities. The Mbale small towns are currently managed by local authorities, but once proposed works are completed, the towns will be transferred to the NWSC in accordance with the MWE's guidelines. DED, RAP, ESIA/ESMP for Mbale were completed under the current WMDP. The NWSC has engaged a consulting firm to carry out the detailed designs for Gulu, which are expected to be completed by December 2018.

Component 3: Water Resources Management (US\$25.5 million of which National IDA US\$25.0 million and counterpart funds US\$0.5 million)

Context

25. Uganda's economy is highly dependent on water resources, yet there is limited cross-sector coordination when planning water-related interventions. Concerns over inadequate water resource management have grown given Uganda's recent industrialization, the frequency of floods and droughts, visible environmental degradation, and the pollution of water resources. This situation calls for mechanisms to promote integrated development and management of water resources to create synergies among various sectors, reduce water and environmental degradation, and ensure more efficient utilization of water resources to meet various social and economic demands. To address these challenges, the MWE developed a 'Framework for Catchment Based Integrated Water Resources Management' in 2010 as a basis for integrated development and management of water and related resources. This framework guides the establishment of CMOs and the preparation of CMPs. The framework is being promoted through the four WMZs: Albert WMZ, Kyoga WMZ, Victoria WMZ, and Upper Nile WMZ. In line with this framework, catchments have been demarcated and are the units through which water and related resources will be managed and developed. CMPs are being prepared through a participatory process following the recently published 'Uganda Catchment Management Planning Guidelines'. The World Bank, through the WMDP, has provided key support to the development of the IWRM framework in Uganda, which is embedded in the National Water Policy. Under this Project, the GoU proposed operationalizing the IWRM framework through the implementation of catchment management measures and the consolidation of IWRM planning instruments, including a water resources monitoring and information system.

26. This component will finance Project activities designed to support implementation of catchment management measures in select sub-catchments as well as national efforts to mainstream IWRM in Uganda's water sector program. Specific activities include (a) undertaking catchment management measures to promote soil and water conservation, river bank protection and restoration; and (b) and providing alternative livelihoods for affected communities. The proposed component will include a TA to prepare a Water Resources Strategy for the Albert WMZ, CMPs and related technical studies for priority sub-catchments in identified hot spot sub catchments, and a national groundwater management study; and (c) activities to strengthen water resource monitoring and information systems, including installation of the WIS at the national and WMZ levels, installation of hydrologic monitoring systems, and rehabilitation of the National Water Quality Reference Laboratory.

27. Apart from the national support to IWRM, this component will mainly support activities in the Upper Nile and Kyoga WMZs (where most of the WSS investments financed under this Project and the WMDP are located). This component will contribute to national, regional, and local stakeholders' capacity to apply an IWRM approach to infrastructure development.



Catchment Management Measures

28. This component will include catchment management measures in four degraded sub-catchments in the Upper Nile WMZ (Kochi and Aswa II sub-catchments) and Kyoga WMZ (Lwakhakha and Awoja sub-catchments). The interventions will be based on CMPs that were prepared under the WMDP with the full participation of catchment stakeholders. The four sub-catchments were identified as hot spots because high population pressure, poor land use management practices, and wetland encroachment are leading to excessive land degradation and water quality and quantity challenges. Table 1.3 presents the proposed interventions for the four sub-catchments. The interventions are classified as: (a) soil and water conservation measures; (b) river bank protection and restoration; and (c) alternative livelihoods for affected communities. These interventions are complementary to the water source protection measures included in Component 1, which mainly focus on micro-catchments surrounding the intake water source structures for the respective WSS systems.

Table 1.3. Indicative Catchment Management Measures

WMZ	Catchment	Sub-catchment	Hot Spot Issue	Proposed Measures
Kyoga	Mpologoma	Lwakhakha	<ul style="list-style-type: none"> • Soil erosion • Deforestation • River bank erosion and siltation • Biodiversity loss 	<ul style="list-style-type: none"> • Soil and water conservation measures (rehabilitation of gullies, planting grass strip contours and afforestation) • River bank protection and restoration (demarcation and revegetation of the river banks using live markers, construction of gabions) • Alternative livelihood promotion (bee keeping, increasing fodder production along river banks)
Kyoga	Awoja	Middle and Lower Awoja	<ul style="list-style-type: none"> • Deforestation and poor agronomic practices • Floods • Droughts 	<ul style="list-style-type: none"> • Soil and water conservation measures (construction of stone and soil bunds, infiltration pits, check dams, receiver ponds, and rehabilitation of gullies) • Environmental management measures (tree planting in degraded areas, conservation and demarcation of wetland systems, and river bank protection and stabilization) • Livelihood improvement measures (improving livestock production through increasing fodder production, improving horticultural production, and promoting energy saving technologies)
Upper Nile	Aswa	ASWA II	<ul style="list-style-type: none"> • Soil erosion • River bank degradation and high sediment load in rivers • Wetland degradation • Flooding 	<ul style="list-style-type: none"> • Soil and water conservation measures (construction of infiltration trenches and contour buffer strips, planting of contour grass strips, stone and soil bunds) • Environmental management measures (demarcation and revegetation of the river banks, construction of gabions for river bank stabilization)



WMZ	Catchment	Sub-catchment	Hot Spot Issue	Proposed Measures
			<ul style="list-style-type: none"> Declining biodiversity 	<ul style="list-style-type: none"> Livelihood improvement (improving livestock production, improving horticultural production, promoting energy saving technologies)
Upper Nile	Albert Nile	Kochi	<ul style="list-style-type: none"> Floods and droughts Wetlands and forests degradation Poor land practices and high sediment loads in rivers Inadequate surface water resources 	<ul style="list-style-type: none"> Soil and water conservation measures (construction of infiltration trenches, percolation pits and contour buffer strips, gully plugs, and planting of grass strips along contours) Environmental management measures (demarcation and revegetation of the river banks using live markers, construction of gabions for river bank stabilization) Livelihood improvement (improving livestock production, improving horticultural production, promoting energy saving technologies)

Water Resources Strategy for the Albert WMZ

29. Uganda is divided into four WMZs—the Upper Nile, Kyoga, Albert, and Victoria. The current WMDP has focused mainly on two zones—the Upper Nile and Kyoga WMZs, while the LVEMP II has focused on the Victoria WMZ. The proposed Project will provide support for the Albert WMZ, which lies in the western part of Uganda and is characterized by high topography as well as a high potential for hydropower generation and water supply through GFS. Challenges that water supply schemes in the WMZ face include significant seasonal fluctuations in water quantity, poor water quality and landslides, which occasionally wash away systems. The water demand in the WMZ is expected to grow given the expected increase in oil production investments by 2020. Several rural water schemes (including the two gravity flow systems) that will be supported by the Project are in this zone. The Water Resources Strategy will be prepared with full participation of all stakeholders under the CMO and will follow Uganda’s CMP Guidelines.

Catchment Management Plans

30. In addition, the Project will support preparation of management plans for four other hot spot catchments in the Albert and Kyoga WMZs. These CMPs will be prepared with the full participation of all stakeholders under the CMO, will follow Uganda Catchment Management Planning Guidelines, and will incorporate lessons learned from the WMDP. This activity will also strengthen capacity at the regional and local levels to utilize analytical tools to prepare integrated and strategic catchment action plans in a participatory manner.

Groundwater Assessment

31. Groundwater is widely distributed in Uganda and is usually potable. Capital investments and operational costs of groundwater-based systems are much lower than those of surface water-based



systems. Groundwater development is also being considered for small-scale irrigation and other uses as an adaptation measure to climate change and in situations where surface water sources are not available at a reasonable cost. Despite Uganda's growing dependency on groundwater, concerns remain over its sustainability. The problems associated with excessive groundwater development are very localized. Effective planning and management strategies to regulate and control groundwater activities are key to ensuring that the groundwater is utilized sustainably to address unmet water demands. The availability of groundwater and its vulnerability to human and climatic impacts needs to be further assessed given that many towns and RGCS are using groundwater for solar-powered water schemes.

32. This component will support a comprehensive groundwater assessment and the development of a toolkit to inform further development of groundwater. The toolkit will include guidelines on aquifer utilization as well as reports and maps showing the aquifers' characteristics, distribution, and responses to pumping. This work will be closely coordinated with the implementation of Component 1 to ensure that the WSS investments are adequately guided on the potential for and sustainability of groundwater development, the spacing of production boreholes as well as the pumping regimes. The information generated will be fed into the WIS for use in future groundwater development projects.

Water Information System

33. A robust and reliable water resources monitoring network is key to the operationalization of the IWRM framework and to building Uganda's resilience to climatic variation. A review of the water monitoring network carried out by the DWRM in 2005 showed that there is insufficient baseline data on groundwater as well as monitoring of boreholes to represent the full range of hydrogeological and climatic conditions in Uganda. For surface water, the review revealed that the operational gauges are inadequate and that the digitized data are not transmitted to a central processing center due to lack of a data transmission interface with an automated sensor. To address these issues, the WMDP supported the strengthening and expansion of the existing hydrological, hydrometeorological, water quality monitoring network in the Kyoga and Upper Nile WMZs as well as the design of a comprehensive WIS that integrates the hydrological information system, spatial data system, information management system, knowledge management system, and data management system. The WMDP supported the development of the detailed design of the National WIS, which will now be implemented at the national and regional level in all WMZs through this project.

34. In addition, the Project will further improve water resources monitoring by providing additional monitoring stations and equipment to monitor surface water, groundwater, water quality, and climate variations. The Project will also support the use of online remote sensing equipment to enable real-time monitoring and improve the quality and timeliness of data collection for the WIS. The Project will also support the rehabilitation of the National Water Quality Reference Laboratory.

Component 4: Project Implementation and Institutional Strengthening (US\$5.5 million of which national IDA US\$5.0 million and counterpart funds US\$0.5 million)

This component will finance activities designed to ensure effective and efficient Project implementation and coordination as well as institutional strengthening to support WSS service delivery reforms. Project management activities will include (a) coordination of planning, monitoring, reporting and supervision of the Project; (b) training of MWE and NWSC staff on World Bank procedures related to procurement,



environmental and social safeguards, and FM; and (c) establishing a PST comprising key technical specialists (for example, water resource management specialist, safeguards, M&E, and fiduciary specialists) to assist the Project IAs. Institutional strengthening activities will include (a) preparing a water supply and sanitation sector financing study to support the implementation of Uganda's 2018–2023 Water and Environment SSIP; and (b) strengthening the MWE's regulatory functions of the at the regional level.

35. This component will ensure that the IAs have adequate inputs for Project oversight, reporting, and implementation. *Project Management Activities*

36. Component 4 supports the implementation of Components 1 to 3. This component aims at ensuring effective and efficient overall project management by the MWE, as well as supporting the two IAs (NWSC and MWE) to effectively implement and manage the Project. This will include Project planning, implementation, monitoring and reporting, and management in line with the GoU and World Bank procedures as well as the procurement of equipment required for implementation, such as office equipment (for example, computers) and vehicles (including O&M for the vehicles).

Institutional Strengthening to Support WSS Sector Reform

37. **Sector financing.** The MWE is currently developing an SSIP for 2018–2023. Recent developments and trends and the foreseeable donor commitments indicate that it is unlikely that Uganda will have adequate WSS funding to achieve the national sector targets and SDGs. The new SSIP will make this funding gap visible, but more support is needed to address this challenge. Therefore, this component will support a sector financing study to support the MWE leadership make strategic decisions given limited resources and explore new financing opportunities from internal and external sources (including public-private partnership [PPP], commercial financing, and green infrastructure investments).

38. **Strengthening WSS regulatory functions.** This component will finance TA and capacity building to strengthen the regulatory functions of the MWE. A recent comprehensive assessment and ongoing projects financed by other DPs have been considered in the design of this component to increase synergies in the consolidation of the water sector. The Project will finance training for national and regional regulatory unit staff and service providers on the sector performance monitoring framework, the O&M institutional framework, and other relevant regulatory areas. The planned improvements to UPMIS system (under Component 1) will facilitate the monitoring of performance and compliance of umbrellas with improved information/data quality and reporting by the umbrellas.

Umbrella Water Authority Model

Background

39. In 2002, the GoU launched the UO to provide O&M support to water authorities in small towns and rural areas. To date, the UWAs have played a key role in keeping the systems functional by providing high-level technical and managerial support. In addition, the UWAs have provided financial support for major repairs, training, and water quality monitoring. The GoU and donors subsidize the UWAs' services.

40. Despite the effectiveness of the Umbrella support model, the small towns and RGCs have struggled to provide sustainable day-to-day O&M, employ preventative maintenance, and properly



manage their assets. Very few providers have been able to save enough for capital maintenance investments in their systems. Overall, the small towns and growth centers remain highly dependent on donor-funded backup structures (UWAs and technical support units) for support.

41. To remedy this issue, the NWSC assumed responsibility for 204 small- to medium-size schemes (see the ‘Sectoral and Institutional Context’ section of the main text for more detail on the transfer process). The NWSC, however, does not have capacity to assume management of all of Uganda’s 1,000 plus small- to medium-size schemes. Given this reality, the GoU began, with the support of DPs and the participation of stakeholders, analyzing alternative solutions. After much study, the GoU ultimately decided on the umbrella approach, which was derived from the 2016 ‘Reorganization of Water Supply and Sewerage Service Areas in the Urban Water and Sanitation Sub-sector in Uganda, Phase II – Preferred Option Report’ by the German Agency for International Cooperation (*Deutsche Gesellschaft für Internationale Zusammenarbeit, GIZ*)

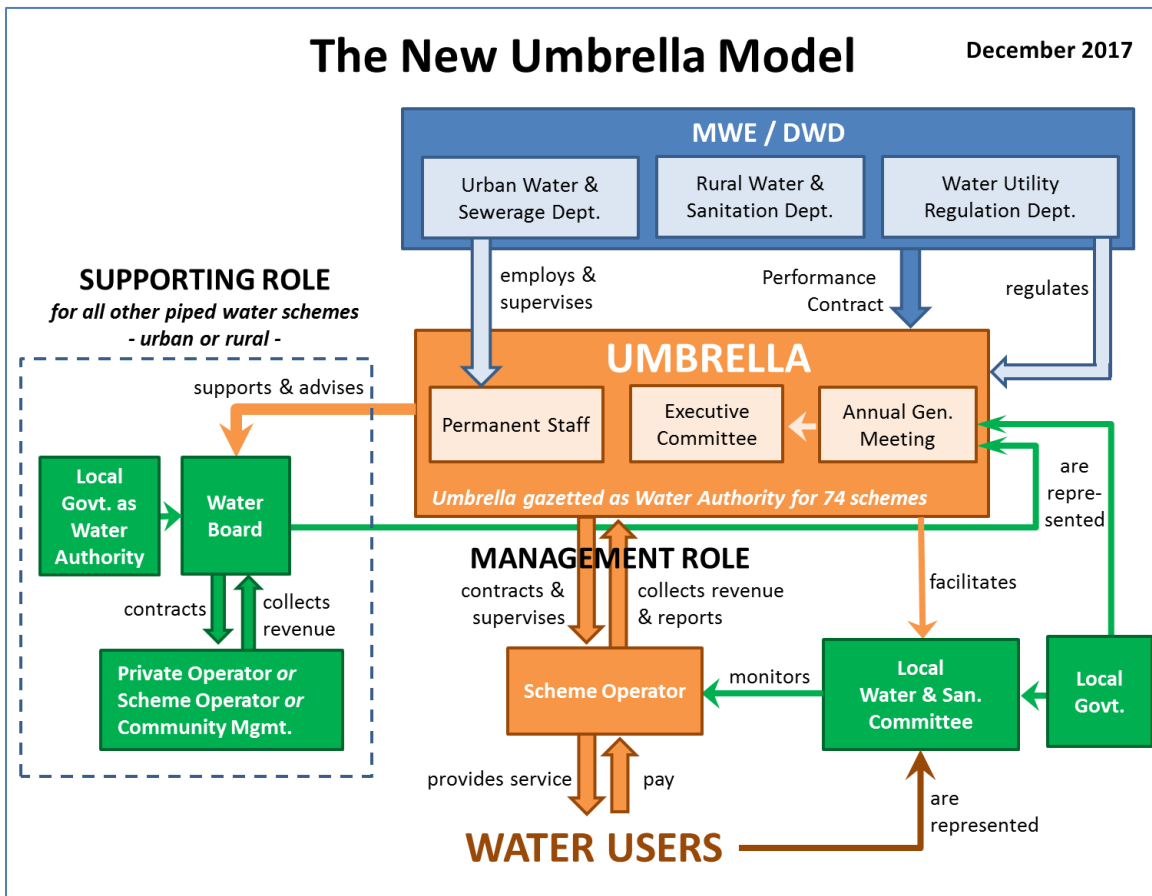
The Umbrella Approach

42. Under the umbrella approach, the six regional UWAs will assume direct management responsibilities (contract management, asset management, and revenue collection) for small towns and RGCs that are not managed by the NWSC. Each UWA will manage approximately 30 schemes with approximately 300 households per scheme. The UWAs will also continue in their high-level advisory role, providing support to approximately 400 schemes.

43. At the local level, the former Water Boards will become Water and Sanitation Committees. The Water and Sanitation Committees will represent consumer interests, and the local scheme operators (individual or firm private operators) will report to the UWA. Figure 1.1 illustrates the roles and responsibilities of the various actors under the umbrella approach. The MWE has determined specific role and responsibilities for key actors (the UWAs, committees, local governments’, scheme operator, and the MWE) under the UWA model.



Figure 1.1. Umbrella Water Authority Model



Source: MWE.

44. As stated in the MWE’s Water and Environment Sector Performance Report 2017, “It will be a main focus of work for 2017/2018 to establish their [the UWAs’] new governance, FM and monitoring systems and conduct related capacity building.”

45. For the time being, the UWAs will maintain their current governance structure. In addition, the UWAs will, following the GoU’s long-held policy, set tariffs that cover full O&M cost recovery, including overhead costs and a portion of investment costs. The UWAs may decide to apply tariffs that vary according to the type of water systems, or a UWA may take a ‘cross subsidy approach’ and apply a uniform tariff for all its water systems. The guidelines that the MWE is preparing on the operation of the UWAs will further define tariff structures.

Performance To-Date

46. In August 2017, the MWE appointed six regional UWAs (Northern, Midwestern, Karamoja, Southwestern, Central, and Eastern) as water and sanitation authorities for 71 small towns (about 10 small towns per UWA). To date, the UWAs have performed relatively well with collection rates at 75 percent,



NRW at 29 percent, and metering rates at 80 percent for the initial 71 gazetted schemes. Table 1.4 provides financial information on two UWAs.

Table 1.4. Performance of the Northern and Midwestern Umbrella

Location of headquarter	Northern	Mid-Western
Umbrella organization established	2011	2007
Start of operations as water authority	August 2017	August 2007
Number of districts where Umbrella operates	25	13
Number of gazetted schemes (direct management responsibility of the Umbrella)	14	18
Number of additional schemes supported by the Umbrella	107	85
Total number of active connections (gazetted schemes only)	2,809	2,387
Total revenue collected (October 2017, gazetted towns only)	UGX 27.5 million	UGX 33.6 million
Total direct O&M costs (operator remuneration, energy, chemicals, routine maintenance) (October 2017, gazetted towns only)	UGX 16.3 million	UGX 27.1 million

47. While the UWAs can cover their routine O&M costs,⁴⁶ they do not generate enough revenue to cover their capital investments. Capital investments, however, are critical for the successful operation of the UWAs given that many schemes are not fully operational and require urgent rehabilitation work. In addition, many schemes do not have meters, have limited private connections, and lack water source protection. To overcome this financing gap, the GoU has been piloting a Revolving Financing Facility with the UWAs as well as securing external financing from donors.

48. The Project's financial evaluation indicates that after investments in the systems are made, the operating costs per cubic meter will decrease gradually as production increases, building the capacity of the UOs to maintain the works and assume future capital investment costs. However, to ensure the sustainability of the systems and the service, the UO guidelines should include the following: (a) full operating expenditure cost recovery with additional margin of at least 25 percent; (b) automatic tariff adjustment to variation of costs; (c) efficiency gains in operations and revenue collection; and (d) water scheme management contracts with mechanisms to ensure compliance. See Annex 4 for more detail.

⁴⁶ Only a few diesel-powered schemes are expected to pose cost recovery challenges. In these towns, cost optimization strategies including the installation of solar-powered systems will be considered as part of the utility management support.



ANNEX 2: IMPLEMENTATION ARRANGEMENTS

Project Institutional and Implementation Arrangements

- 1. The MWE and the NWSC are the IAs for the IWMDP and the Project implementation arrangements will utilize existing GoU systems and structures.** The Permanent Secretary of the MWE will be the Accounting Officer for Project funds mapped to Components 1, 3, and 4, while the Managing Director of the NWSC will be the Accounting Officer for Project funds mapped to Component 2. On a day-to-day basis, the relevant directorates and departments will be responsible for operational activities including coordination, FM, monitoring, and supervision of their respective component activities. The MWE's Directorate of Water Development (DWD) through its UWSSD will be responsible for small towns under Subcomponent 1.1, the DWD's RWSSD for RGCs under Subcomponent 1.1 and Subcomponent 1.2, the NWSC through its P&CDD for Component 2, the MWE's DWRM for Component 3, and the MWE's WESLD for Component 4 including overall Project coordination. The detailed Project component implementation arrangements are outlined below. Each component or subcomponent will have a focal point—an officer in charge of overseeing the implementation of activities mapped to the respective department or directorate. The existing decentralized management structures (WMZs, NWSC town offices, UOs, and WSDFs) and local governments will support the IAs in their efforts to deliver outputs in each of the Project areas.
- 2. Coordination mechanism.** Given the number of departments (MWE's UWSSD, RWSSD, DWRM, and WESLD, and NWSC's P&CDD) involved in the Project, the MWE's WESLD will take the responsibility for overall coordination and communication. The WESLD will liaise with the different implementation teams to coordinate planning, reporting, supervision, and oversight across departments involved in the Project. The WESLD will engage a PST consisting of water resource management specialist, procurement, FM, M&E, and safeguards specialists to assist focal points in both IAs. This team will provide support to the WESLD assisting all Project implementation departments and units to carry out specialized tasks, as well as consolidating work plans, planning budgets, monitoring results, compiling reports, and disseminating outputs and outcomes. Procurement and accounting functions in the NWSC will be undertaken through the respective departments—the PDU and Accounts Section—in line with fiduciary and procurement requirements. The WESWG will provide the overall operational and policy guidance to ensure that the Project components and activities are implemented as intended to fulfill the Project objectives. The WESWG membership comprises MWE leadership, other line ministries, and all DPs supporting the water and environment sector. For the implementation of the host community and refugee subcomponent, the MWE will liaise with the OPM and the UNHCR to ensure a coordinated response to refugee inflow, resettlement, and protection issues.
- 3. The WESWG** and relevant governing bodies (NWSC Board of Directors) will provide high-level operational and policy guidance to ensure that the Project components and activities are implemented as intended. WESWG members include leaders from the MWE, the NWSC, other line ministries, and all DPs who are active in the water and environment sector. The WESWG will facilitate coordination of Project activities with other DPs who are supporting complementary activities.



Specific Component Implementation and Administration Mechanisms

Component 1: Water Supply and Sanitation in Small Towns and Rural Growth Centers and Support to Districts Hosting Refugees

4. The MWE has assigned a Project implementation role to the DWD for Component 1 through the UWSSD and RWSSD. The DWD has assigned adequate staff to implement, manage, and monitor these tasks and ensure that the incremental costs associated with Project implementation are fully funded throughout the Project's duration. The DWD will work closely with the regional structures (WSDFs and others) who will support day-to-day implementation and liaise with local governments and regional utilities in which the subprojects are located. The DWD will liaise with the WESLD (Component 4) to coordinate planning, monitoring, reporting, and information management across the Project.

Component 2: Water Supply and Sanitation in Large Towns and Support to Districts Hosting Refugee

5. This component will be implemented by the NWSC through its P&CDD, drawing on staff from other divisions and the Project areas as required. At Project completion, or significant completion of major, operable phases, the P&CDD will hand the system over to the local town NWSC management. The NWSC has appointed a component Project manager who will be responsible for the activities in all three Project towns. The Project manager will report to the director of the P&CDD who, in turn, reports to the Managing Director. The NWSC has also appointed a principal engineer responsible for each town to supervise the technical implementation of activities in the respective towns. Each principal engineer will be assisted by a senior engineer as well as safeguard (social and environmental) specialists, one for each Project town. Procurement and accounting functions in the NWSC will be undertaken through the respective departments—the PDU and Accounts Section—in line with fiduciary and procurement requirements.

Component 3: Water Resources Management

6. This component will be implemented by the DWRM. A focal point, who will report to the Director of DWRM, has been appointed for overseeing implementation of the entire component. The focal point will be responsible for coordinating the component's activities, including liaising with the WMZs and consolidating required reports and annual plans. A number of subcomponent focal points have also been appointed to provide oversight for their respective subcomponents. In addition to coordinating activities under their respective subcomponents, these focal points will monitor work progress, implementation of the PP, and achievement of subcomponent milestones and results. In addition, the focal points will prepare annual work plans in consultation with the activity teams. At the local government level, the CMOs will be established in the respective Project areas. These CMOs are designed to provide a sustainable and effective role for catchment stakeholders in water development and management in the catchment. The WMZs are responsible for establishing, informing, and collaborating with the CMOs.

Component 4: Project Implementation and Institutional Strengthening

7. This component will support the MWE to provide the necessary management, coordination and support for effective Project implementation. The MWE, through the WESLD, will be responsible for overall coordination of the Project, including reporting, M&E, procuring required equipment and tools,



facilitating Project supervision and review missions, liaising with stakeholders, and developing cross-cutting studies (including midterm reviews and audits—technical, financial, and procurement). On behalf of the IAs, the WESLD will ensure timely compilation and review of regularly required inputs such as work plans, PPs, progress reports, audits, and other reviews. It will also hire and manage a PST that will include procurement specialists (2) who will work with the PDU team, accountants (2) who will work with the Accounts Department, an M&E specialist who will coordinate the work of both IAs, and social and environmental safeguard specialists (2) who will work with all teams to ensure good safeguards management and compliance. Other technical specialists may be hired to support specific implementation teams as needed, including a water resources management specialist.

Financial Management

8. Under the MWE, the Project's transactions will be managed within the existing setup. The activities and transactions will be approved and authorized by the Permanent Secretary who is the Accounting Officer. All transactions will be processed in accordance with GoU established controls and procedures.

9. The MWE has a fully functioning Accounts Department headed by the Assistant Commissioner of Accounts, a qualified accountant. The department has a senior accountant and several accounts assistants. The main accounts of the MWE are computerized with the IFMS. However, this system is only operational for government funds, and the Project module is not yet fully operational. As a result, Project financial reports cannot be generated directly from the IFMS. The accounting section also has a unit that handles the WMDP that has fully qualified accounting staff. Although the unit has a large number of staff, only three are senior (at the level of officer and above), which affects decision-making. The current WMDP has a financial management specialist (FMS) who is qualified and experienced and is expected to be dedicated for the Project. It also has the position of assistant FMS that fell vacant recently and will be filled in due course. With this level of staffing, there will be sufficient hands to manage the implementation of the Project.

10. The MWE has an Internal Audit Unit comprising four internal auditors seconded from the MoFPED's Department of Internal Audit. There is also an audit committee in place at the MoFPED to which the Internal Audit Unit reports. The committee meets quarterly to review internal audit findings and the actions that have been taken to address them. The MWE's Permanent Secretary ensures that action is taken to implement internal audit recommendations and where action is not taken, the findings are also reported in the external audit report. The audit committee closely follows up on the action taken by the MWE as part of its oversight role. The Project's financial statements will be audited by the Auditor General in accordance with statutory requirements, auditing standards, and suitable ToRs. Regarding internal controls, the internal audit function in the MWE works well. However, improvements will be required for the Project during implementation, given the Project's countrywide coverage. Actions are required to improve timely submission of the MWE's internal audit review reports and to fully operationalize the Project module of the IFMS.

11. For the NWSC, the Project's transactions will be managed within its existing setup. The activities and transactions will be approved and authorized by the Managing Director. All transactions will have to be processed in accordance with the policies and procedures of the NWSC. The NWSC has a fully functional Finance and Accounts Department headed by the Deputy Managing Director of Finance and Corporate



Strategy who is a qualified accountant. The Accounting Unit of the NWSC is computerized with Iscala accounting systems. The NWSC also has an Internal Audit Department comprising qualified and experienced auditors. There is also an audit committee of the board in place. The Project's financial statements will be audited by the Auditor General in accordance with statutory requirements, auditing standards, and suitable ToRs. Currently, the NWSC is audited by Pannel Kerr Forster -Uganda on behalf of the Auditor General. The accounting and internal control arrangements are sound and acceptable for the implementation of the Project. To ensure that the Project is effectively implemented, the MWE and the NWSC will have to ensure that appropriate staffing arrangements are maintained throughout the life of the Project.

12. Funds will flow from IDA to the MWE and the NWSC. For both the MWE and the NWSC, all funds will be expended at headquarters as the activities will be implemented as a centralized project.

13. **Reporting.** The MWE and the NWSC will prepare interim financial reports (IFRs) on a quarterly basis and submit them to the World Bank no later than 45 days after the end of each calendar quarter. Annual financial statements will be prepared in accordance with International Public Sector Accounting Standards (which, among others, include the application of the cash basis of recognition of transactions). Audited financial statements will be submitted to the World Bank within six months of the end of the financial year. The statements will follow the formats used under the WMDP.

14. For external audits, the Auditor General is primarily responsible for auditing all government projects. Usually, the audit is subcontracted to a firm of private auditors; the final report is usually issued by the Auditor General and based on the tests carried out by the subcontracted firm. The private firms to be subcontracted should be among those that are acceptable to the World Bank. In case the audit is subcontracted to a firm of private auditors, IDA funding may be used to pay for the cost of the audit. The audits will be conducted in accordance with International Standards on Auditing.

Disbursements

15. The Project will apply a report-based disbursement system. Initially, requests to the World Bank for disbursements will be based on approved work plans and cash flow projections for eligible expenditures for six months. The World Bank will make advance disbursements from the proceeds of the credit into the Project Designated (Special) Accounts to expedite Project expenditures as evidenced by quarterly IFRs. The MWE and the NWSC have established effective FM and accounting systems, which will facilitate regular disbursements. The Project will need to (a) sustain satisfactory FM rating during Project supervision; (b) submit IFRs consistent with the agreed form and content within 45 days of the end of each reporting period - calendar quarter; and (c) submit timely and satisfactory audited annual financial statements.

16. **Withdrawal of the Proceeds of the Financing.** The Recipient may withdraw the proceeds of the Financing to finance Eligible Expenditures; in the amount allocated and, if applicable, up to the percentage set forth against each Category of the following table (Table 2.1)



Table 2.1 - Withdrawal of the Proceeds of the Financing

Category	Amount of Credit Allocated (expressed in SDR)	Amount of Grant Allocated (expressed in SDR)	Percentage of Expenditure to be financed (inclusive of Taxes)
1. Goods, works, non-consulting services, consulting services, Training and Operating Costs under Parts 1(a), 3 and 4 of the Project	94,260,000		100
2. Goods, works, non-consulting services, consulting services, Training and Operating Costs under Part 2(a)(i) of the Project	22,680,000		100
3. Goods, works, non-consulting services, consulting services, Training and Operating Costs under Part 2(a)(ii), (iii), (iv) and (v) of the Project	29,140,000		100
4. Goods, works, non-consulting services, consulting services, Training and Operating Costs under Part 1(b) of the Project	21,210,000	14,950,000	100
5. Goods, works, non-consulting services, consulting services, Training and Operating Costs under Part 2(b) of the Project	7,310,000	5,250,000	100
TOTAL AMOUNT	174,600,000	20,200,000	

17. **Designated (Special) Account.** The MWE and the NWSC will each establish individual U.S. dollar denominated Designated (Special) Accounts at Bank of Uganda. The Designated (Special) Account will receive dollar deposits/transfers from the IDA Credit Account. These funds will be used to meet U.S. dollar payments made at the headquarters as well as to meet transfer of funds to the local currency Project account for meeting the Uganda shilling payments. The MWE and the NWSC will open and operate local currency Project bank accounts that will form the primary source of financing for Project activities in local currency. The MWE and the NWSC will each be fully responsible for the management of the accounts, including signatories. Funds flow arrangements for the Project shall be the following: IDA will make an initial advance disbursement from the proceeds of the credit and/or grant by depositing into the respective Designated (Special) Accounts. Actual expenditure will be reimbursed through submission of Withdrawal Applications together with IFRs, as applicable. The MWE and the NWSC will each be responsible for all foreign payments out of their Designated (Special) Accounts. They will also be responsible for local currency payments out of the Project accounts. For the MWE, payments will be approved and signed by the Accounting Officer (Permanent Secretary, MWE) as the principal signatory and the person designated by the Accountant General who, in this case, is the Assistant Commissioner-Accounts. Other designated signatories will also be signatories to the bank accounts as and when proposed and approved. For the NWSC, there will be two categories of signatories—A and B. Category A, which is mandatory, is the Managing Director and Category B is the Deputy Managing Director Finance



and Corporate Strategy. It is expected that acceptable FM arrangements will continue to be in place throughout Project effectiveness and implementation.

18. Key risks envisaged under the current Project are the following: (a) ministry internal audit review reports are not shared regularly with the World Bank. This is risky given the number of ongoing activities and spread of operations where such reviews give management needed assurance of fiduciary status; and (b) the IFMS has not been fully operationalized at the ministry, which increases the risk of errors and accuracy of financial reports. These same risks affect the new project under preparation.

19. The conclusion of the assessment is that the FM arrangements for the Project have an overall risk rating of Moderate.

Procurement

20. The Borrower will carry out procurement under the proposed Project in accordance with the World Bank's 'Procurement Regulations for IPF Borrowers' (Procurement Regulations), dated July 2016 and revised in November 2017, under the NPF; the 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, dated July 1, 2016; and other provisions stipulated in the Financing Agreement.

21. To improve Project implementation and to achieve results, the Borrower has prepared a PPSD. The PP for the first 18 months of Project implementation has been developed based on the PPSD. The PP sets out the selection methods to be followed by the Borrower during Project implementation in the procurement of goods, works, and non-consulting and consulting services financed by the World Bank. The PP will be updated at least annually or as required to reflect the actual Project implementation needs and improvements in institutional capacity. The 18-month PP is included in the Project files.

Box 2.1. Summary of PPSD

The MWE through its P&CDD is the IA for all components except Component 2, which will be implemented by the NWSC. The MWE and the NWSC are implementing the ongoing US\$135 million WMDP, which will close in December 2018.

Under the WMDP, various contracts have been executed albeit with time delays and cost overruns. The IWMDP will benefit from the capacity and knowledge built as well as the lessons learned and mechanisms put in place under the WMDP. Under the Project, most of the procurement transactions will be for works/construction activities that will be implemented using established technological practices and construction methodologies. The pace of technological changes in the water sector is moderate and has a minor impact on the overall pricing.

For high-value, high-risk, or complex contracts identified in the PP, contract management plans will be prepared. To mitigate procurement capacity risks, there will be a need for staff capacity building and training, continuous oversight, reviews and audits, and the use of real-time monitoring and tracking tools.

22. **Systematic Tracking of Exchanges in Procurement (STEP).** The Project will use STEP, a planning and tracking system, which will provide data on procurement activities, establish benchmarks, monitor delays, and measure procurement performance. Both the MWE and the NWSC are familiar with STEP,



which was also used under the WMDP. The knowledge built, lessons learned, and corrective mechanisms put in place will provide a foundation for the IWMDP.

23. **Procurement risk assessment.** A procurement capacity assessment undertaken in March and April 2018 established that (a) Sub-component 1.1 (Small Towns) will be implemented by a “new” technical team currently handling the contract management of the concluding stages of the civil works under the WMDP. Although the team’s experience in contract management is a plus, the team has no experience in procurement processing under IDA; (b) Sub-component 1.1 (RGC) and Sub-component 2.1 will be implemented by technical staff who have not implemented an IDA project before, but the activities are similar to their normal work. The environmental and social safeguards studies are only commencing, and the first civil works bidding document is expected to be completed in January 2019; and (c) Component 2 will be implemented by a mix of technical staff who implemented the WMDP and new staff. While the new staff assigned to the IWMDP are handling IDA projects for the first time, they have experience utilizing the country system for works less than US\$2 million. Draft bidding documents under Sub-components 1.1 and Component 2 for Busia and Mbale have been submitted to the Bank and bidding documents for Gulu will be ready by the end of October 2018. Request for Expression of Interest (REOI) for construction supervision for Busia and Mbale will be published in July 2018. The risk identification for the MWE and the NWSC and risk mitigation plan are based on the Procurement Risk Assessment and Management System. Based on the assessment, the Project procurement risk rating is High. The key risks and risk mitigation action plan are indicated in Table 2.1. The residual risks after the implementation of the mitigation measures would be reduced to Substantial.

24. **Use of national procurement procedures.** Due to recent changes in Uganda’s procurement legal framework, Uganda National Procurement Procedures are not in line with the World Bank Procurement Regulations Section V - Para 5.4 National Procurement Procedures. In particular, the following provisions are not consistent with Procurement Regulations (a) use of domestic preference for contracts obtained through open national competitive procedures; (b) fees for handling bidder complaints at procuring entity level; (c) disqualification of bidders for not purchasing bidding documents from the procuring entity; (d) restrictions on contract amendments in excess of 25 percent aggregated amount, (e) limitation to the use of bid-securing declarations; and (f) the Buy Uganda, Build Uganda policy, which limits the participation of all eligible bidders. Hence, procurement following the national market approach will also follow World Bank Procurement Regulations and Standard Procurement Documents (SPDs).

25. **Standard Procurement Documents.** The World Bank’s SPDs shall be used for procurement of goods, works, and non-consulting services while approaching national and international markets. The election of consulting firms shall use the World Bank’s SPDs in line with the procedures described in the Procurement Regulations.

26. **Procurement of works.** Works contracts envisaged under the Project include (a) construction of up to six water supply systems in seven cluster towns; (b) implementation of priority source protection measures; (c) construction of four FSTFs in cluster towns; (d) construction of two gravity flow WSS schemes; (e) construction of solar-powered large piped WSS systems in selected RGCs, host, and refuge communities; (f) construction of two large gravity-based WSS systems; and (g) construction and rehabilitation of Mbale, Gulu, and Adjumani II Pakele WSS system, among others.



27. **Procurement of consultancy services.** Consultants will be selected to support the design and supervision of construction of the works as well as for stakeholder engagement, training of community and school health clubs, review of the ESIA and the RAP of the WSS systems in refugee host communities, and for preparation of micro-catchment management and source protection plans. Individual consultants and/or support personnel may also be hired to augment existing capacity within the implementing line ministries in accordance with the provisions of Paragraph 7.32 of the Procurement Regulations.

28. **Procurement of goods.** Goods will include, among others, the supply of equipment for the establishment of a fully functional national WIS, supply and installation of hydrometric equipment, and supply of equipment and tools to support Project implementation and the WMZs.

29. PDU staff under both the MWE and the NWSC are proficient in procurement processing under national law, the Public Procurement and Disposal of Public Assets (PPDA) Act, but have no experience in IDA procurement management. The PDUs manage a heavy workload under GoU funding, leading to delays in procurement processing. The MWE’s PDU staff who supported the WMDP was transferred to another agency. Under the proposed Project, the MWE proposes hiring a procurement specialist proficient in IDA procurement management and an assistant procurement specialist to enhance the capacity of the PDU. The NWSC has assigned three PDU staff to handle procurement processing under the IWMDP. The staff, however, have no previous experience under IDA. The staff will work closely with the technical staff who have developed capacity under the WMDP in IDA procurement processing. Both agencies will hire additional procurement and technical staff on a needs basis where any expertise is found to be lacking to mitigate the risk of delays.

30. The residual risks after the implementation of the mitigation measures proposed in Table 2.2 would be reduced to Substantial.

Table 2.2. Risk Mitigation Action Plan Matrix

Risk	Mitigation Measure	Timeframe	Responsibility
PDU staff have no experience in using World Bank Procurement Regulations and Procedures and have a heavy workload; MWE staff have no experience with IDA-funded procurement	Recruit a procurement consultant with qualifications and experience acceptable to IDA to build capacity and assist in processing procurement activities.	Within three months of Project effectiveness	MWE
	Training and hand-holding for capacity building of PDU and ‘new’ departments on the World Bank Procurement Regulations and Procedures	Throughout Project implementation	MWE/NWSC
Delayed construction and underestimation of the cost of works attributed to preparation of designs for works during the Project life	Costed detailed designs for two high value works (Busia and Mbale) under the IWMDP already in place and associated ESIA and RAP updates to be concluded by June 2018	By Project effectiveness	MWE/NWSC
Delays in preparing specifications, statement of requirements, and ToR by the User Departments	Timely identification of gaps and hiring of experts to support the MWE to prepare comprehensive technical requirements/ToR which will require minimum change during the design review	Throughout Project implementation	MWE/NWSC



Risk	Mitigation Measure	Timeframe	Responsibility
Inefficiency in processing evidenced by delays at each stage of the procurement cycle	Ensure minimum staff turnover of Coordination Unit to retain the capacity built under the WMDP; regular top management monitoring and follow-up of implementation	Throughout Project implementation	MWE/NWSC
Inadequate working area/rooms and space for record keeping/filing	Provide sufficient working area/rooms and space for record keeping/filing.	Within three months of Project effectiveness	MWE
Inadequate knowledge and skills/experience in contract management	Conduct training on FIDIC contracts and contract management to build contract implementation capacity for major works and consultancy contracts	Within six months of Project implementation and annually thereafter	MWE/NWSC
Inadequate deployment of staff at contract management stage	Client to prepare contract management plan for each contract indicating, among others, deployment of adequate staff in skills and numbers including on-site presence	Throughout Project implementation	MWE/NWSC
Limited domestic contracting capacity to conduct projects of this nature, complexity, and scope; thus, most contracts will be done by international firms.	Packaging to consider contracting capacity of the potential contractors and market sounding as well as multi-modal or wider dissemination of bidding opportunities to elicit participation from the capable providers; Subconsultant/contractor and joint ventures should be encouraged to enhance capacity of individual firms.	Throughout Project implementation	MWE/NWSC
Complaints due to alleged unfairness and interference in evaluation and unaccounted for arithmetic errors resulting in delays and denting credibility of procurement processing	Consider adopting two envelope market approach for high-value works contracts subject to international competition	Throughout Project implementation	MWE/NWSC
Delays in paying vendors due to delays in internal approving processes	Establish tracking system for payment approval processes and hold staff accountable for delays and strengthen the Internal Audit Unit and Accounts Departments to expedite vendor's payment-approving process.	Throughout Project implementation	MWE/NWSC
Borrower to learn and adopt Procurement Regulations July 2016 of the World Bank NPF	Need-based procurement trainings for the Project team including Contracts Committee on World Bank Procurement Regulations and NPF in general	Throughout Project implementation	MWE/NWSC
Incomplete needs assessment and inadequate attention to geophysical studies during detailed designs resulting in design changes/variations during construction and consequently time and cost overruns	Outcome-based needs identification approach to contracts including comprehensive design reviews to ensure completeness Contracting allowing for adequate mobilization time and at least 18 months for construction	Throughout Project implementation	MWE/NWSC



Risk	Mitigation Measure	Timeframe	Responsibility
Lack of operational funds within the Project which greatly affected the contract management function	Inclusion in budget of operational expenses	Throughout Project implementation	MWE/NWSC

31. **Record keeping and management.** For each executing agency, the head of the PDU working closely with procurement specialists, where applicable, will be responsible for record keeping and shall open a procurement file for each contract processed and upload the same information in the STEP. The file should contain all documents on the procurement process in accordance with the IDA requirements and as described in the PPDA Act. Each IA will ensure that there is adequate lockable storage space for active files and for archiving.

32. **Disclosure of procurement information** shall follow the requirements of the Procurement Regulations subject to the market approach and selection method. In addition, the IAs shall publish an action report on any complaints received on a quarterly basis.

33. **Fiduciary oversight by the World Bank (frequency of procurement supervision).** The World Bank shall prior review contracts as per prior review thresholds set in the PPSD/PP and participate in one supervision mission annually to carry out a procurement post review to assess consistency and compliance with the agreed procedures. However, the World Bank may conduct independent procurement reviews of all the contracts financed under the credit at any time.

34. **Beneficial Ownership Pilot.** The Project involves procurement within Operational Procurement Review Committee thresholds. In such procurement, before a contract is signed, the winning bidder will be required to complete a standard template identifying beneficial owners, who are individuals with a controlling interest in the company. Borrowers will be required to publish beneficial ownership information, together with other contract award information, on their websites and the World Bank’s external website. This information will not be routinely verified by the Borrower or the World Bank. However, the World Bank may conduct verification when triggered by integrity red flags, or in other cases when extended due diligence is warranted.

35. **Contract management.** The high-risk and high-value procurements will be identified for increased contract management support and indicated in the PP. The agencies will develop key performance indicators (KPIs) for the identified contracts to be monitored during actual execution of contracts. The World Bank team will provide additional due diligence and independent review of the contract performance of such identified procurements.

36. **Operating costs.** These will be procured using the Borrower’s procurement, financial, and other administrative procedures acceptable to the World Bank. These include costs associated with travel, accommodation, per diems, office consumables and maintenance, motor vehicle maintenance, and implementation support personnel, and so on. Salary top-ups, meeting allowances, sitting allowances, and honoraria to civil/public servants and contracted consultants shall not be financed by the Project.

37. **Training and workshops.** The Project will finance training and workshops, if required, based on an annual training plan and budget which shall be submitted to the World Bank for its prior review and



approval. The annual training plan will identify, among other things, (a) the training envisaged; (b) the justification for the training; (c) the personnel to be trained; (d) the duration for such training; and (e) the estimated cost of the training. At the time of the actual training, the request shall be submitted to the World Bank for review and approval. Upon completion of the training, the trainees shall be required to prepare and submit a report on the training received.

Table 2.3. Thresholds for Procurement Approaches and Methods and Prior Review Thresholds

Thresholds for Procurement Approaches and Methods (US\$, millions) - Goods, Works, and Non-Consulting Services					
Category	Prior Review (US\$, millions)	Open International	Open National	Request for Quotation (RfQ) - International	Request for Quotation (RfQ) - National
Works	≥5	≥5	<5	≤0.2	UGX 10,000,000 – UGX 200,000,000
Goods, IT, and non-consulting services	≥1.5	≥1	<1	≤0.1	UGX 5,000,000 – UGX 100,000,000
Thresholds for Procurement Approaches and Methods (US\$, millions) - Consulting Services					
Category	Prior Review (US\$, millions)	Short List of National Consultants			
		Consulting Services	Engineering and Construction Supervision		
Consultants (Firms)	≥0.5	≤0.2	≤0.3		
Individual Consultants	≥0.3	n.a.	n.a.		

Environmental and Social (including safeguards)

38. The IWMDP supports a range of infrastructure investments, including construction and rehabilitation of WSS systems, IWRM measures, and rehabilitation of water quality laboratories, among others. Water supply systems will consist of piped water supply schemes either fed by surface water (river/lakes) or high-yield boreholes run by solar-powered. They will also include intake structures for surface water, WTPs, storage tanks, and water mains and distribution networks. Activities related to sanitation facilities will consist of construction, rehabilitation and expansion of wastewater lagoon systems in Mbale municipality, FSTFs in small towns, sewer networks, and communal on-site sanitation facilities in markets and schools. Majority of the project interventions are small to medium scale. The largest interventions are in the Gulu Municipality (population. 300,000) with the construction of a new surface water supply system of 30,000 m³/day and the Mbale Municipality (population. 163,314) with the construction and rehabilitation of water supply works and sanitation facilities.

39. The Project triggers safeguards policies on Environmental Assessment (OP/BP 4.01), Involuntary Resettlement (OP/BP 4.12), Safety of Dams (OP/BP 4.37), Projects on International Waterways (OP/BP 7.50), Forests (OP/BP 4.36), Natural Habitats (OP/BP 4.04), and Physical Cultural Resources (OP/BP 4.11).



40. **Category Assessment.** The IWMDP is assigned an EA Category B given that significant adverse environmental and social impacts are not expected due to the nature of the proposed activities described above, that is, interventions are mainly small to medium scale. This conclusion was based on a thorough review of specific subprojects (Mbale WSS, Busia WSS, and Gulu Water Supply) and after taking into account of the environmental and social screening of potential subprojects conducted under the ESMF. The anticipated negative impacts are expected to be localized, site-specific, and ranging from small to moderate in scale. For instance, for the Mbale and Busia sub-projects (projects with detailed designs), significant impacts are not expected from (a) surface water abstraction on downstream users and ecological biota because minimum EF, as in the case of Namatala River, will be maintained through augmentation of the source and/or reducing the water services to an acceptable level; (b) biosolids generation and treated wastewater discharges on water quality and land degradation; and (c) from influx of labor in project areas. The same nature and scale of impacts are anticipated in Gulu and in other future subprojects. On the Gulu subproject, the assessment concluded that the Gulu intake will not rely on the performance of the Karuma Dam (currently under construction). In addition, the Project is expected to have minimal land take and physical displacement of Project-Affected Persons (PAPs).

41. **In summary, the Project is not anticipated to generate any potential large scale, significant and/or irreversible impacts, as none of the planned project activities will be in environmentally sensitive areas.** All project negative impacts are expected to be mitigated with known technology, good practices and management solutions that will result in residual impact of minor significance. Refer to Paragraph 46 for a summary of mitigation measures. Given the above justification of EA Cat B for IWMDP, any subproject that will be screened as Category A will be excluded from financing unless the project is restructured to make way for the financing of such subprojects.

42. **Environmental Assessment OP/BP 4.01.** The Project will largely generate positive impacts contributing to public health, economic growth, and environmental sustainability through (a) rehabilitating and constructing of centralized wastewater systems, faecal sludge treatment facilities, and on-site sanitation facilities to reduce contamination of surface water, groundwater sources and drinking water networks; (b) reducing the discharge of untreated wastewaters to land and waterways; (c) increasing coverage and improving service quality of drinking water systems; and (d) promoting sustainable catchment management of watersheds.

43. **As indicated above, there are no anticipated large scale, significant or irreversible negative environmental impacts associated with the Project. However, implementation of the Project may result in potential adverse environmental and social impacts.** Potential impacts during construction may include impacts on water bodies associated to earthworks and wastewater generated from construction activities; emissions of particulate matter with earthworks and removal of vegetation cover, improper handling of asbestos cement (AC) pipes, OHS risks, and social misdemeanor by workers (labor influx). The impacts during construction phase will be temporary while works are carried out. During the operational phase, the potential risks include unpleasant odors and noise from the operation of sanitation facilities; sludge management and wastewater effluent discharges that exceed standards; possible impacts on surface and/or ground water due to leakages from the facilities (sewers, manholes, ponds, and septic tanks) because of storm flows overloading the system; and impacts of water abstraction on EFs and aquatic ecosystems, including migratory fish species.



44. **Mbale WSS subproject.** The likely negative environmental and social impacts for the Mbale sub-project include potential impacts on freshwater biota and downstream users from reduction in minimum EF during low flows/dry season, degradation of land and soil erosion, pollution of water resources generation of noise improper handling of AC pipes and accessories improper management of waste air/dust OHS risks public safety issues, pressure on existing resources, landscape and land use impacts, social misdemeanor by construction workers, disruption of communication routes, loss and degradation of natural habitats, disruption to public utilities, land-take, and septage disposal. There is also the impact on natural resources of waste water treatment plants (WWTPs) in Mbale Municipality if these systems are not adequately operated.

45. In relation to the environmental and social impacts of the new water intake structure at the Namatala River to feed the Bungokko WTP, the ESIA suggests enough water is available to meet water demand by year 2040 (0.313 m³/s) for most of the year. However, Namatala's dry weather flows in some cases may not be sufficient to meet projected water demand and maintain an adequate EF. Therefore, downstream users and aquatic biota could be affected if minimum EF is not maintained. In addition, the Mbale service area may not have sufficient water to meet its water needs during the dry season. Mitigation measures are included in Section 46 below.

46. **Busia WSS subproject:** The identified impacts are like the Mbale sub-project. The impact on hippopotamus at the WTP site was identified as a key impact that needs to be adequately mitigated. The ESIA also highlights the potential of eutrophication in the FSTF receiving stream (i.e., Okame stream) if the discharge effluent is not adequately managed given that there are no natural wetlands to polish the treated effluent.

47. **All project adverse impacts are expected to be mitigated with known technology, good practices and management solutions.** The following key mitigation measures have been recommended for implementation, and shall be incorporated in various implementation arrangements, including bidding documents and contract's ESMP.

- a. Treated effluents from WWTPs and FSTF will not generate significant impacts if the facilities are designed, operated and maintained according to design standards. The leakages from sewers, sludge drying beds and wastewater stabilization ponds (proposed in Mbale Municipality only) will be minimized by regular monitoring and maintenance of the network; connections between sewers will be made water-tight to prevent leakages of wastewater to groundwater; and frequent effluent quality will be monitored to avoid release of poorly treated effluents into waterways. In addition, desludging and transportation of sludge will be safely managed by the provision of training to sludge emptiers on safe sludge handling measures, monitoring and enforcement of sludge handling practices, the provision of adequate transportation and personal protective equipment, and public education campaigns about the treatment system and the required sludge management and reuse requirements. Dried stabilized sludge from drying beds will be used for agricultural reuse or disposed to a solid waste landfill (Mbale Landfill and Busia Waste Disposal site) during low demand periods. Adequate training will be provided to operators of the treatment facilities to ensure that dried stabilized sludge is only reused once it is safe for human handling and agricultural purposes (i.e. levels of pathogenic bacteria, viruses and protozoa reduced to appropriate levels). The FSTF in Busia will be designed to reduce and



treat the percolate (liquid stream) before discharging to the Okame stream. In addition, at the discharge point, the IA will install markers and signages on the health risks of using the Okame stream for domestic purposes, conduct community sensitization, and provide alternative water if needed.

- b. All requirements for construction of the sludge drying beds, especially for providing water impermeable basins, efficient drainage system for leachate and flood protection structures like cut-off drains and small embankments will be put in place when needed.
 - c. Unpleasant odors and noise, if any, will be mitigated by correct O&M of the plant along with siting of the facilities away from habitations – all in line with government specifications.
 - d. For AC pipes, the Environmental Management Plan has included management measures for the removal, packaging, transportation and disposal of existing asbestos waste, following additional guidance that will be provided by NEMA for handling such hazardous materials.
 - e. Raw water abstractions will be designed based on technical studies to ensure safe yield from groundwater and surface water resources. Minimum EF for Namatala and other rivers that will be tapped by the project will be maintained and ensured. The NWSC should adhere to the safest maximum abstractable water quantities throughout the Project life. The Namatala water intake will be designed to allow minimum EF pass through the abstraction point. Flow monitoring devices will be installed to monitor minimum EF by the NWSC and DWRM
 - f. For the Mbale subproject, before construction, the NWSC will carry out an Augmented Water Supply Study to evaluate options to augment water source during low flows for Namatala and assess the reliability of the proposed water supply system. The options will include, among others, but not be limited to: (i) construction of a water impoundment structure at the Namatala intake site to store water during high flows and sustain the water demand during the dry spell; (ii) construction and rehabilitation of boreholes in the small towns; (iii) expansion of Manafwa water supply system; and (iv) a reduction in water service delivery at acceptable levels. The study will include specific recommendations and an implementation plan. Complementary and inclusive solutions are considered, not individual solutions; therefore, the final recommendation would likely be a combination of these options. The MWE and the NWSC will implement the recommendations under the IWMDP.
 - g. Water source protection. Catchment management measures will be implemented with the aim of conserving and allowing recharge of water resources. Community sensitization regarding the water supply system and water conservation measures will be encouraged: saving water is an efficient way of reducing the overuse of ground water resources. It is not only decreases the amount of the water withdrawn, but may also reduce the threat of pollution
 - h. An awareness campaign will be launched for the residents about proper O&M of both WSS facilities to reduce the introduction of grease, solid waste and other non-biodegradable particulates into the sewerage network and on-site sanitation facilities.
-



- i. Measures to address labour influx include (i) hiring of local workforce as much as possible; (ii) active engagement with the communities, particularly targeting the vulnerable groups including women and girls, on raising the awareness of the potential arrival of external workers, requirement for contractors to draft workers' codes of conduct; (iii) inclusion of particular conditions in works contract, such as a code of conduct outlining contractor's responsibilities on workplace culture, Labor Influx Management plan, and Worker's Camp Management Plan; (iv) mandatory training for all employees on legal conducts in local communities and legal consequences for non-compliance, sensitizing them not to engage in relationships with underage girls and married women, and on issues relating to exploitation, HIV/AIDS and STDs; and (v) maximizing the distance of the camp sites from the communities and provide provision of services and entertainments within the camps to reduce the need to use community facilities and interacting with the local community, as well as providing opportunities (periodic leave) for workers to regularly return to their families.
- j. Consult the Uganda Wildlife Authority before commencement of any works at the Busia WTP site regarding protection of the habitat of Hippopotamus. A Wildlife Management Plan has been prepared for the project, and it should be implemented by the contractor during construction and the operator during the operation phase of the Project.
- k. In addition, even though main water and sewer pipelines will follow the right of way for roads, road encroachment and potential works like plants, pump stations and storage tanks may have land acquisition implications and displacement (both economical and physical) that will require the design and implementation of RAPs. RAPs for Mbale and Busia have been conducted and specific issues are included in Section II above.
- l. The project will also apply the World Bank Industry Specific Water and Sanitation EHS Guidelines. In addition to this, the World Bank has put in place a set of Environmental, Social, Health and Safety Enhancements for SPDs and Standard Bidding Documents (SBDs), which shall be applicable for all new works contracts for which the relevant SBD/SPD are used. The contractor ESMP is also required to include Labor Influx Management Plan and Worker's Camp Management Plan.

48. **Safeguards EA Instruments.** Compliance will be ensured through diligent application of an ESMF and site specific ESIA/ ESMPs. For subprojects that have completed DEDs (Mbale WSS, including nearby small towns) under Component 2 and Busia WSS under Component 1), site- specific ESIA/ESMPs have been undertaken, consulted upon, reviewed and cleared by the World Bank, and disclosed both in country and on the World Bank external website.

49. The Mbale ESIA was initially approved by the World Bank on July 7, 2017 and disclosed in-country and on the World Bank's external website on February 3, 2018. Further review was undertaken by the World Bank during March to April 2018 and the revised version was cleared by the World Bank on May 7, 2018 and redisclosed in country and on the World Bank's external website on May 8, 2018.

50. The Busia ESIA was initially cleared by the World Bank on July 20, 2017 and disclosed in country and on the World Bank's external website on October 13, 2017. However, three key changes in the site



location of the components of the system (Water Intake, WTPs and FSTF) were made and required updates to be made to the ESIA. Those were carried out and the revised document was cleared by the World Bank on April 26, 2018. and redisclosed in country and on the World Bank's external website on May 3, 2018.

51. For all other subprojects included under Components 1, 2, and 3, and for which detailed feasibility and design studies have yet to be undertaken, the MWE prepared an ESMF, which was cleared by the World Bank on March 16, 2018 and disclosed in-country and on the World Bank's External Website on March 22, 2018. The ESMF will guide all environmental and social assessments (SA) that will be undertaken by the IEs and Contractors. The main purpose of the ESMF is to (a) establish clear procedures and methodologies for the review, approval, and implementation of investments to be financed under the Project; (b) specify appropriate roles and responsibilities and outline the necessary reporting procedures for managing and monitoring environmental and social concerns related to Project investments; (c) determine the training, capacity building, and TA needed to successfully implement the provisions of the ESMF and the subsequent ESIA/ESMPs, as applicable; and (d) provide practical information on resources required to implement the ESMF requirement. The ESMF include general SAs and specific guidelines to conduct a detailed SA as part of the site-specific ESIA.

52. The Project will also apply the World Bank Industry Specific Water and Sanitation EHS Guidelines. In addition to these, the World Bank has put in place a set of Environmental, Social, Health and Safety Enhancements for SPDs and SBDs which shall be applicable for all new works contracts for which the relevant SBD/SPD are used. The contractor ESMP is also required to include Labor Influx Management Plan and Worker's Camp Management Plan.

53. **Natural Habitats OP/BP 4.04.** No significant conversion (loss) or degradation of natural habitats, whether directly (through construction) or indirectly (through human activities induced by the project) is anticipated through project activities. However, OP/BP 4.04 has been triggered as the project will involve catchment management measures and some of the investments may involve afforestation, reforestation and improvement of watersheds. In addition, most of the WSS activities will either abstract water from rivers/lakes, which could affect EF downstream, and discharge treated wastewater effluent into waterways, which could affect water quality and aquatic ecosystems. During construction, the civil works may affect the waterways (turbidity, siltation, sedimentation, etc.). All subprojects will include/encompass natural habitats assessment and mitigation under the given sub-project ESIA/ESMP to manage impacts on any natural habitats. The project sub-component design will ensure that any discharged effluent from project implemented wastewater or FSTFs will meet appropriate local effluent standards for treated wastewater/fecal sludge, before discharge into the natural environment. The project will also ensure minimum EF for rivers tapped as sources of water. If a subproject can cause irreversible damages, it will be excluded.

54. **Forests OP/BP 4.36.** OP 4.36 is triggered due to potential project impacts on health and quality of forests, especially in the catchment areas where the project will support afforestation, reforestation and improvement of watersheds. Compliance will be ensured through the ESMF and site-specific ESIA/ESMPs.



55. **Physical Cultural Resources OP/BP 4.11.** The policy is triggered due to the possibility of chance finds of physical cultural resources during construction. Any potential impacts on Physical Cultural Resources will be addressed by incorporating reporting, handling procedures and management as part of site specific ESIA/ESMP. PCRs inventory shall be part of the ESIA process, and appropriate mitigation measures shall be developed under the ESMP. The Mbale RAP identifies seven graves that will have to be relocated and includes three measures to handle displacement of graves: (a) cash compensation based on Uganda's approved district rates; (b) transport assistance; and (c) financial assistance for rituals/ceremonies involved in the relocation of cultural resources. The Busia ESIA and RAP did not identify graveyards, cultural areas, or archaeological sites. The Mbale and Busia ESIA and the project ESMF include chance finds procedures as precautionary measures just in case there are chance finds during excavations.

56. **Involuntary Resettlement OP/BP 4.12.** The policy is triggered because of the potential negative social impacts that might result from the need for land acquisition and/or the loss of access to economic assets and livelihoods due to IWRM and WSS activities. The MWE has prepared a RPF, which has been publicly consulted upon and disclosed in-country and on the World Bank website on March 13, 2018.

57. Specific RAPs for the Mbale and Busia WSS projects were cleared by the World Bank in 2016. During project preparation, the client submitted updated versions which were cleared by the World Bank on April 17, 2018 (Mbale RAP) and on April 24, 2018 (Busia RAP) and disclosed (In-country and on the World Bank external website) on April 26, 2018.

58. The Project is expected to have minimal land take and physical displacement of PAPs. Most of the works will consist of pipe installation that will lead to temporary impacts and be confined to existing road reserves and as such, minimal land take is expected with the main impacts consisting of disruption of economic activities. Type of assets include, for the most part, fences, walls, kiosks, and crops. Very few homes and businesses will need relocation because of the anticipated works (i.e. reservoirs, fecal sludge treatment, and water treatment systems). The specific RAPs indicate that for Mbale, 919 PAPs are expected - of which four households will be physically displaced and the rest being temporarily affected by economic displacement. For Busia, the RAP has identified 173 PAPs who will all face temporary economic displacement.

59. All relevant instruments (Mbale and Busia RAPs and RPF) include specific recommendation and guidelines to mitigate the impacts on PAPs, including provision for special assistance to vulnerable population, as well as an adequate implementation budget that includes resettlement cost, income restoration payments, and RAP management budget. The RPF outlines the principles and legal and institutional procedures to be followed in the event of land acquisition, impact on assets, and/or loss of livelihoods. The RPF include general SAs and specific guidelines to conduct a detailed SA as part of the site-specific RAPs.

60. **Safety of Dams OP/BP 4.37.** OP 4.37 is triggered as the project will finance rehabilitation and construction of small dams (i.e. dams below 15 m in height, as per OP 4.37) identified through the catchment planning process under Component 3, including small dams to prevent soil erosion and for flood protection. The existing Small Dam Guidelines prepared for Uganda, and the FAO Manual on Small Earth Dams (both disclosed) will be used to ensure adherence to generic dam safety measures. The environmental and social impacts of these small dams will be assessed and will confirm that these dams



pose no or negligible risk to communities and assets. The Project will ensure qualified engineers are used to design these dams.

61. The Project does not support the construction or rehabilitation of large dams and subprojects do not include structures that will rely on the performance of an existing dam or dam under construction (DUC). The latter conclusion also applies to the Gulu Water Supply System, which was evaluated carefully given that the intake structure would be in the backwater of the Karuma dam (a DUC). The abstraction point of the intake would be close to the river bed and below the minimum reservoir operational level. The proposed intake is a submerged structure, which would be designed to include protective features to pipes, valves and associated electromechanical installations. Failure of the dam will not affect the intake operation given that it is located upstream of the dam and the Nile river EF of 100 m³/s is more than sufficient to maintain constant raw water flow into the intake wet well (design capacity 0.34 m³/s). The KfW will finance the and WTPs and the World Bank would finance the associated transmission and distribution pipelines.

62. **International Waterways OP/BP 7.50.** The policy is triggered since some of the activities encompass international waters including the River Nile and the Lake Victoria, which is part of the River Nile Basin. In accordance with OP 7.50, on January 15, 2018, the Nile Basin Initiative notified riparian states on behalf of the GoU and requested comments no later than March 11, 2018. Rwanda responded with a no objection to the Project. No comments have been received from other states by the due date. To conclude this process, a memorandum to the Regional Vice President (RVP) summarizing the results of the Riparian Notification was submitted by the World Bank task team. The RVP cleared the memorandum. It is not anticipated that the Project will cause appreciable harm to any of the riparian states through water deprivation, pollution or otherwise. Neither it is anticipated that the implementation of the Project activities will adversely change the overall quantity or quality of water flowing to or from any of the riparian states of the concerned international waterways.

63. **Gender Analysis.** A Gender Impact Study of the Water and Sanitation Sub-Sector (March 2017), commissioned by the MWE, highlights the socioeconomic impacts of insufficient WSS facilities on women and girls and their livelihoods. Women have long been recognized for their integral role in managing WSS and hygiene in the household and community, as they are the primary users, collectors, transporters, and managers of water. While women are increasingly participating in the decision making and planning process, more still need to be done so their participation is mainstreamed and effective in all WSS committees. Women and girls bear the heaviest burden for water collection. Long walks to water sources trigger serious social consequences, particularly GBV, such as sexual assaults of women and girls, physical and verbal abuses of women and children from husbands due to frustration from delays at water sources, and limitations in women's ability to engage in income-generating activities. Women are also affected disproportionately from disease caused by unsafe water sources and poor hygiene practices and the lack of adequate sanitation facilities, which contribute to women's unwillingness to work outside of their homes and girls not attending school for fear of harassments due to the lack of gender-segregated stalls and proper menstrual hygiene management facilities. The Project will address these impacts along with recommendations proposed by the study to alleviate GBV and improve gender mainstreaming. For instance, the Project will construct infrastructure, which aims to improve accessibility to WSS, thus reducing the overall distance that women and girls must walk for water collection. The sanitation facilities supported by the Project will be gender segregated in schools and public spaces and will include menstrual



hygiene management and handwashing facilities for girls. TA will be provided to the IAs to strengthen their capacity to train UOs, community-based organizations and local leaders on mainstreaming gender in O&M of WSS facilities. The Project will also include community sensitization, GBV prevention, and skill development and training activities to women to promote their participation and effectiveness in decision making on WSS issues, supporting the GoU's aspiration to achieve the national target of 100 percent of WSS committees with women in key leadership positions. In addition, the Project will support activities to improve gender-specific M&E (for example, percentage of WSS committees with women in key positions⁴⁷).

64. GA will be carried out as part of the specific SA process under ESIA's to examine gender-related issues, promote gender equality, and enhance the Project's development effectiveness. The specific GA will include an action and monitoring plan. The GA will be based on the MWE's WSS Gender Strategy and the Gender Impact Study of the Water and Sanitation Sub-Sector.

65. **Labor influx.** The proposed Project will apply utmost due diligence in the management and monitoring of labor influx to minimize any potential GBV in the Project areas. The amount of labor influx will vary by Project components as in some areas labor influx will be minimal given the type of the work and technology could be supplied by local workforce, while in other areas works might involve labor from outside of project areas. The ESMF includes procedures, institutional responsibilities, and mitigation measures for screening, assessing, and managing issues related to labor influx that will be applied to all site-specific ESIA's. Potential preventive measures include (a) sourcing local workforce as much as possible provided skill sets are met; (b) actively engaging the communities, especially vulnerable groups on the potential arrival of external workers, social conducts and behaviors, and grievance redress mechanisms; (c) including particular conditions in works contract, such as a code of conduct outlining contractor's responsibilities on workplace culture, Labor Influx Management Plan, and Worker's Camp Management Plan; (d) conducting mandatory training for all employees on the legal conducts in local communities and legal consequences for non-compliance and on ethical behavior (for example, not to engage in relationships with underage girls and married women) as well as on issues relating to exploitation, HIV/AIDS, and STDs; (e) maximizing the distance of the camp sites from the communities and providing services and entertainments within the camps; (f) providing opportunities for workers to regularly return to their families; (g) strengthening IAs' capacity on labor influx management; and (h) liaising with Ministry of Gender on community sensitization initiatives and trainings

66. **Citizen engagement.** The Project will engage participating communities throughout the Project cycle to foster behavior change and sustainability. The MWE's Software Steps (Steps in Implementation of Water and Sanitation Software Activities, 2012) will allow for systematic application of citizen engagement activities to ensure a sense of ownership and commitment. For instance, the Project will actively empower communities by setting up local supervision committees to provide oversight during construction and after completion. In the refugee settlements and host communities, stakeholder consultations will be conducted with local leaders and community members in collaboration with the OPM and the UNHCR to build consensus on issues and approaches for the Project. Beneficiary satisfaction surveys, including a survey specifically for the districts hosting refugees will be conducted at the Project's start, midterm review, and at completion. Relevant corrective actions will be monitored over the life of

⁴⁷ Key positions in WSS committees are: Chairperson, Vice Chairperson, Secretary and Treasurer.



the Project. The Project will also establish a grievance redress system dedicated to addressing residents' complaints related to the Project's works.

67. **Borrower's capacity assessment.** The Project will be implemented by two IAs: the MWE and the NWSC. Regional entities (WMZs and UOs), local governments and their partners (for example, district officers) will support the IAs in their efforts to deliver outputs. The Project will utilize similar implementation arrangements as those setup for the ongoing WMDP. The MWE and NWSC have satisfactorily implemented WSS and water resources management projects with the WMDP and have accumulated extensive experience with respect to implementation of World Bank safeguards procedures. The IAs will be responsible for the preparation and implementation of safeguards instruments, as well as overall compliance with relevant national safeguards regulations and World Bank safeguard policies.

68. A rapid assessment of the capacity of the IAs revealed acceptable and satisfactory levels of technical know-how for planning, design, and implementation of WSS and water resources management investments and TA. There are four qualified safeguards staff in each IA responsible for day-to-day implementation and supervision of safeguards requirements for the Project. There is also a Safeguard Coordinator who will provide technical advice; consolidate the progress reports from the Project safeguards specialists; monitor the implementation of the ESMF, the RPF, and specific safeguards documents; and liaise with the WMZs and other stakeholders (national, regional and district) on environmental and social issues related to the Project. The assessment indicates that there are dedicated and qualified staff to carry out safeguards activities. The proposed safeguards team will manage both the current WMDP and IWMDP for an estimated overlapping period of six months, as the WMDP closes while the IWMDP is launched. The assessment concluded that there is not a need to add additional safeguards staffing at the MWE and NWSC given that the WMDP is closing in December 2018 and a projected low work load in 2018 for the IWMDP given the effectiveness period and planning phase. However, the World Bank team in coordination with the IAs will monitor and assess the need of additional staff and periodic safeguards capacity enhancement during implementation support missions.

69. The ESMF/RPF includes a section on implementation arrangement with the roles and responsibilities of key actors, TA to support the capacity needs of the IAs and supporting organizations (local government, consultants and contractors), and a detailed budget for the implementation of the ESMF/RPF and other social and environmental aspects. At least two training events per year will be conducted and they will be tailored to different target groups, including national IAs, local and regional supportive structures, and contractors and supervision consultants. The ESMF includes tailored training and workshop programs. The Borrower is committed to implement the institutional strengthening and capacity building aspects included in the ESMF and RPF and the World Bank will ensure that adequate budget is allocated to implement all proposed safeguards measures. The Contractors and Supervision Consultants shall be required to include on their teams, qualified safeguards Staff (Environmental Specialist, Health and Safety Officer, Social Development Specialist).

70. **Public consultations.** To ensure that key interests of the public are addressed and incorporated into the design and implementation of the IWMDP safeguard tools, stakeholder consultations were carried out as part of the ESMF, RPF, and specific ESIA/RAP preparation processes. Consultations were undertaken using key informant interviews and focus group discussions. Questionnaires were developed to guide the discussions and community meetings were held at the village level.



71. For the ESMF and RPF, the main stakeholders identified and consulted include the MWE; NWSC; NEMA; UNHCR; Ministry of Gender Labour and Social Development; water NGOs; local government representatives; community leaders; local communities; and water service providers. The consultations for the ESMF and RPFs were conducted between January 15-25, 2018.

72. During the Mbale ESIA and RAP preparation, consultative meetings were held with NEMA; MWE officials; Ministry of Gender Labor and Social Development; Mbale District local government and municipality officials; and the project-affected communities. Consultations were conducted in 2015, 2016 and in January and February 2018.

73. During the Busia ESIA and RAP preparation, meetings and consultations were undertaken with project-affected communities (including in Maduwa A Village, Okame-Abochet Village, and settlements along the transmission pipeline), Busia District and Municipal Council Administration in 2015, 2016 and February and March 2018.

74. The results of the consultations are captured in the safeguards instruments. Overall, community members were supportive of the Project and indicated that they hoped to see the timely completion of the works. Concerns highlighted in the consultations relate to displacement of households, land availability and ownership, land conflict, and employment opportunities from works contract. Stakeholder feedback gathered through these meetings informed the final versions of the safeguards documents. Land availability is one of the key aspects looked at during the environmental and social screening and impact assessment. All subprojects shall therefore be screened to confirm availability of land before proceeding with its preparation. Another concern is building capacity within local agencies on safeguards management. These concerns will be addressed in the IWMDP through the various training and capacity-building initiatives proposed under Component 4 (institutional strengthening) and budgeted for under the ESMF.

Monitoring and Evaluation

75. The IAs will be responsible for monitoring and reporting. The MWE and the NWSC will lead data collection and compilation analysis. A Project Liaison Officer will be appointed within the MWE to lead the overall coordination effort in the collection and consolidation of progress reports submitted by each of the MWE's departments that are directly involved in Project implementation (RWSSD, UWSSD, and DWRM) and the NWSC. Monitoring and reporting will focus on key performance data from specific Project activities that contribute to the Project's intermediate results and PDO-level outcomes.

76. **Data collection and reporting.** Progress reports will be submitted on a quarterly basis by the MWE's departments and the NWSC to the WESLD. The WESLD will coordinate with the Planning Department of the MWE to ensure results inform sector-wide reporting, decision-making, and supervision. The WESLD will submit progress reports every semester to the World Bank. To the extent possible, client satisfaction surveys will also be conducted each quarter to monitor the level of client satisfaction with the quality of service. A midterm review will be carried out to evaluate implementation progress and identify potential issues in need of attention and resolution. An end-of-project evaluation will also be conducted two months before Project closing to assess whether the intermediate results and PDO-level indicators were achieved, the sustainability of the results, and lessons learned.



77. An integrated M&E system will be developed and implemented as part of the Project to support implementation and reporting. The MWE, NWSC, and other agencies are currently collecting sector performance data in different databases and monitoring platforms. The MWE utilizes the Water Supply Database, Water Supply Atlas, and the UPMIS. The MWE utilizes operations and financial tracking systems at its headquarters and district levels. The OPM utilized the Refugees Response Portal. The OPM is also currently developing a new refugee database and service provider performance monitoring and tracking system. The new integrated M&E system will interface with various systems to consolidate data storage and facilitate information management. Specific Project information related to procurement, disbursements, and environmental and safeguards implementation will also be integrated in the new M&E system. The development and implementation of this M&E system is expected to be centralized at the MWE.

Climate Mitigation and Adaptation Co-benefits

78. An assessment of climate co-benefits for the Project was conducted for Components 1 to 3. A quantitative analysis was conducted to estimate the Project's impact on GHG emissions and to value the externality using the shadow price of carbon (Annex 4). For each component, GHG emissions were estimated in tCO₂eq using the World Bank Water Global Practice's GHG Accounting Excel Tool. The net emissions of the Project were estimated at -8,124 tCO₂eq. The Project's main contribution to reducing emissions will be through replacing water supply tanker trucks with piped systems in refugee host communities. A qualitative assessment of the climate mitigation and adaptation co-benefits was also conducted based on the information available for each component. The Project has additional measures in place to contribute to the reduction of GHG and to reduce the vulnerability of WSS systems to climate change.

Table 2.4. Climate Mitigation and Adaptation Co-Benefits

Components	Adaptation	Mitigation
Subcomponent 1.1: Support to Small Towns and Rural Growth Centers	<p>Construction and rehabilitation of water supply systems because the design incorporates climate change considerations and is coupled with water source and catchment protection</p> <p>Sensitization activities such as water conservation and water resources management</p> <p>Subprojects will mitigate the impacts of water scarcity and droughts by constructing and expanding water supply systems.</p> <p>Improved sanitation facilities will lower the risk of spreading cholera during periods of flooding.</p>	<p>The reduction of NRW and the replacement of pumps and other equipment with more energy-efficient equipment will reduce the energy consumption per unit of water supplied to customers.</p> <p>Mitigation benefits from using gravity fed instead of pumped systems or solar pumped piped water supply systems instead of diesel generation.</p>
Subcomponent 1.2: Support to Districts Hosting Refugee	<p>Construction and rehabilitation of water supply systems because the design incorporates climate change considerations and is coupled with water source and</p>	<p>Emissions reduction will be through replacing water supply tanker truck use with piped systems in refugee host communities.</p>



Components	Adaptation	Mitigation
	<p>catchment protection</p> <p>Sensitization activities such as water conservation and water resources management</p> <p>Subprojects will mitigate the impacts of water scarcity, and droughts by constructing and rehabilitation water supply system.</p> <p>Improved sanitation facilities will lower the risk of spreading cholera during periods of flooding.</p>	<p>The reduction of NRW and the replacement of pumps and other equipment with more energy-efficient equipment will reduce the energy consumption per unit of water supplied to customers.</p> <p>Mitigation benefits from using gravity fed instead of pumped systems or solar pumped piped water supply systems instead of diesel generation.</p>
<p>Component 2: WSS Large Towns and Support to Districts Hosting Refugee</p>	<p>Benefits can be assigned to construction and rehabilitation of water supply systems because it incorporates climate change considerations in the design of the WSS and is coupled with water source and catchment protection</p> <p>Sensitization activities such as water conservation and water resources management</p> <p>Subprojects will mitigate the impacts of water scarcity and droughts, which are linked to climate change</p>	<p>The reduction of NRW and the replacement of pumps and other equipment with more energy-efficient equipment will reduce the energy consumption per unit of water supplied to customers.</p>
<p>Component 3: Water Resources Management</p>	<p>Adaptation co-benefits can be assigned to water resource management because it is considered an adaptation measure against climate risks such as water scarcity and flooding</p>	<p>IWRM improves overall planning and sustainability of water systems, which results in delaying or avoiding construction of new water systems and therefore reduces GHG emissions.</p>



ANNEX 3: IMPLEMENTATION SUPPORT PLAN

Strategy and Approach for Implementation Support

1. The World Bank task teams will support implementation of the IWMDP. The type and level of support will be guided by the scope of the Project, the activities in each component, relative risks involved, and the institutional capacity of the government counterpart. Implementation support by the World Bank will consist of semiannual full supervision missions, short technical missions, meetings and audio conferences between the World Bank and relevant IAs, and close coordination with the World Bank's staff in Kampala. Because this is the first year that the World Bank is rolling out the IDA 18 Sub-Window for RHC, it is expected that extensive coordination with the UNHCR, humanitarian organizations, DPs, and local authorities as well as stakeholder engagements will be required throughout implementation. Field visits to key construction and rehabilitation sites will be conducted during supervision missions. Additional support will also be provided by the World Bank's procurement, FM, and safeguards specialists, most of whom will be based in the Kampala office, on Project contracts and overall compliance with safeguard and fiduciary requirements. In addition, the Project will support international technical experts to advise the GoU and to provide technical support to the IAs as they develop ToRs, design and feasibility studies. This Implementation Support Plan is indicative and may be revised during Project implementation based on emerging Project challenges and field conditions.

Implementation Support Plan

2. Semiannual supervision missions and short follow-up technical missions will focus on the following areas:

- **Strategic support.** Supervision missions will meet with national and local authorities to (a) review progress on the Project's activities; (b) discuss strategic alignment of the Project's different activities, especially at the planning level between the relevant stakeholders; and (c) evaluate progress on cross-cutting issues such as M&E, training, communication, dissemination of Project results and experiences, and coordination between relevant stakeholders. Additional meetings will also be conducted with UN agencies, humanitarian organizations, and DPs on updates on the refugee situation in the country including WSS challenges and opportunities and the programs supported by different DPs. These meetings will ensure overall coordination efforts and continued strategic alignment of the Project with the government's mandates and policies on refugees.
- **Technical support.** Supervision will concentrate on ensuring the technical quality of bidding documents, evaluation reports, and construction plans. During construction and commissioning, technical supervision will be provided to ensure that technical contractual obligations are met. Regular site visits will be carried out during Project implementation and will involve technical specialists, as needed. Moreover, TA including capacity building and institutional strengthening will be provided to enhance performance of the service provision structure, to develop policy in support of effective service delivery, and to prepare for commercial financing at the NWSC.



- Fiduciary support.** Supervision of procurement and FM support will be carried out by the World Bank semiannually to (a) perform desk reviews of Project IFRs and audit reports, following up on any issues raised by auditors, as appropriate; (b) assess the performance of control systems and arrangements; (c) update the FM rating in the FM Implementation Support and Status Report as needed; (d) provide training and guidance on carrying out procurement processes in compliance with the Procurement and Anti-Corruption Guidelines and the OM; (e) work with the internal audit units at the MWE and NWSC to enhance their capacity in procurement and FM to facilitate Project implementation; (f) review procurement documents and provide timely feedback to the MWE and NWSC; (g) carry out the post review of procurement actions; and (h) help monitor Project progress against the PP.
- Safeguards support.** The coordination begun during preparation would continue throughout Project implementation, especially to ensure that relevant safeguards concerns are included in the works financed under Components 1 and 2 through due diligence from applications of the site-specific ESIA, ESMPs, and RAPs and effective mitigation measures. Supervision from the World Bank safeguard specialists will take place every quarter and close communication will be maintained if requested by the Government.

Table 3.1. Implementation Support Resource Estimates

Time	Focus	Skills Needed	Resource Estimates (Staff Weeks)
First 12 months	Project rollout, management, and implementation support coordination	TT leads	8 per TTL per year
	Confirm subcomponent activities and quality of detailed designs	TT leads	2 per TTL per year
	Social safeguards, including site-specific GA and labor influx screening and risk mitigation measures	Social specialist	6 per year
	Technical and procurement training, review of ToR and bidding document	TT leads, technical specialists, procurement specialist	10 per year
	Fiduciary arrangements and FM systems	FM specialist	3 per year
	Operational support	Operations officer	6 per year
12 to 72 months	Procurement review and feedback of bidding documents and consultant contracts, including conditional clauses on labor influx	Procurement specialist	5 per year
	Technical review of ToR, technical reports, and bidding documents	TT leads, technical specialists	10 per year
	Non-lending TA, capacity and institutional strengthening efforts	TT leads, technical specialists	8 per year
	FM supervision	FM specialist	3 per year
	Social safeguards - supervision	Social specialist	4 per year
	Environmental safeguards - supervision	Environmental specialist	4 per year



Time	Focus	Skills Needed	Resource Estimates (Staff Weeks)
	Project management, M&E, and project supervision coordination	TT leads, technical specialists	10 per year
	Operational support, M&E, lessons learned, progress, and final reporting	Technical specialists and operations officer	8 per year

Note: TT = Task team. TTL = Task team leader.

Table 3.2. Skill Mix Requirements

Skill Needs for Supervision	Comment
Task team leaders	HQ and country based
WSS specialists	HQ and country based, or other regions
Water resource management specialists	HQ and country based, or other regions
Institutional specialists	HQ and country based, or other regions
PPP and finance specialists	HQ or other regions
Utility performance specialists	HQ or other regions
Water engineers	HQ and country based, or other regions
FM specialist	Country based
Procurement specialist	Country based
Social specialist	Country based
Environmental specialist	HQ and country based
Gender specialists	HQ and country based, or other regions
M&E specialists	HQ and country based, or other regions
Economists	HQ or other regions
Lawyers	HQ and country based

Table 3.3. Partners

Institutions	Country
MWE	Uganda
NWSC	Uganda
OPM	Uganda
UNHCR	Multilateral



ANNEX 4: FINANCIAL AND ECONOMIC ANALYSIS

1. This annex presents two different evaluations: (a) an economic and financial evaluation of the Project and (b) a financial evaluation of the service operators (the NWSC and the UWAs). The first evaluation measures whether the Project is justified, that is, if expected benefits are higher than the Project's costs. The second evaluation examines the financial sustainability of the investments, studying the NWSC's and UWAs' financial and operational capacity to maintain and operate the works. The second evaluation also examines the capacity of the NWSC to assume a portion of the IDA credit.

2. The economic evaluation was carried out for interventions under Components 1 and 2. Investment costs of Components 3 and 4 were added proportionally given their importance to the successful implementation of the interventions.

A. Economic and Financial Analysis of the Project

Methodology

3. The economic evaluation is based on a quantitative CBA. The evaluation was carried out from financial and economic perspectives to test the financial sustainability and economic viability of the works. The financial evaluation included costs and benefits at the price paid or received by the providers, while the economic evaluation included cost and benefits to society. Financial prices were transformed to economic prices to eliminate market distortions caused by taxes and subsidies among other factors. A value added tax of 18 percent was used to transform financial prices to economic prices.

4. Although the Project will support the implementation of several sanitation works, this evaluation was conducted including only benefits from water interventions and applying them to the total investment cost (including sanitation).

5. Financial benefits were estimated as the increase in revenues and gains from efficiency improvements. The economic and financial analysis of the Project was closely coordinated with the financial analysis at the utility level to determine the impact of the Project on the utility.

6. The evaluation was conducted using 2017 prices and assuming a 20-year lifetime, a 6 percent discount rate, and an exchange rate of UGX 3,596 to US\$1.

Current Situation of Water Service

7. According to the 2015 National Service Delivery Survey (NSDS), about 25 percent of the population in the dry season and 13 percent of the population in the wet season relies on unprotected/unsafe water sources. Less than 20 percent obtains drinking water from piped systems or public taps. About 50 percent relies on boreholes, protected springs, and gravity flow schemes. Household members also have to travel a considerable distance to access safe water sources.



Table 4.1. Households by Water Source for Drinking

Water Sources	Dry Season (%)	Wet Season (%)
Piped water in dwelling	2.4	2.2
Piped water in compound	5.1	4.1
Piped water outside compound	0.0	0.0
Public tap	9.5	7.2
Borehole/protected springs and gravity flow schemes	57.7	46.2
Rainwater	0.5	26.6
Bottled water	0.3	0.3
Total safe sources	75.5	86.6
Unprotected sources		
Lake/river/stream/pond/dam	22.2	12.1
Other	2.3	1.3
Total other sources	24.5	13.4
Total	100.0	100.0

Source: UBOS on behalf of the Ministry of Public Service (MoPS), NSDS, 2015 Report.

Table 4.2. Households by Distance to Safe Water Sources

Distance (km)	Rural (%)	Urban (%)	Total (%)
0.0 to 0.5	55.3	75.5	59.5
0.51 to 1	22.3	14.8	20.8
1.01 to 1.5	4.5	2.4	4.0
1.51 to 3	13.2	5.2	11.5
Above 3.0	4.7	2.1	4.2
Total	100.0	100.0	100.0

Source: UBOS on behalf of the MoPS, NSDS, 2015 Report.

8. Households also spend considerable time waiting in line to fill their containers. According to the NSDS, in rural areas, the average time for collecting water varies from 50 minutes per day in the wet season to 68 minutes per day in the dry season. In urban areas, times vary from 29 minutes to 42 minutes per day. Households collect about 67 L per day in both seasons.

Table 4.3. Average Time to Drinking Water Sources

	Dry Season		Wet Season	
	Rural	Urban	Rural	Urban
Waiting time at water source (minutes)	34	20	29	17
Time taken to and from water source (minutes)	34	22	21	12
Total water collection time (minutes)	68	42	50	29
Average amount of water used per day (L per household)	66	67	67	67

Source: UBOS- on behalf of the MoPS, NSDS, 2015 Report.



9. Many of the water points are privately managed and provide water at high prices. According to information collected in the field, the price paid per 20 L jerrycan varies from UGX 500 to UGX 1,000. This translates into monthly payments per household from UGX 50,000 to UGX 100,000 (approximately US\$14–28). These prices are significantly higher than the NWSC's price of UGX 31 per jerrycan, which corresponds to monthly water payments of about UGX 3,200 per month (67 L per household per day).

Benefits

10. Economic benefits included in the evaluation were (a) savings in monthly water payments; (b) savings in travel time; and (c) reduction of treatment costs. The benefits were measured as follows:

Savings in Monthly Water Payments

11. The Project will reduce or eliminate the need to buy water from private vendors. The NWSC has a universal tariff that will be applied. If the operator belongs to a UWA, a community-based model, or a private operator, tariffs will cover O&M costs of the system. In all cases, the cost after the Project will be lower than the current prices paid for water needs.

12. Savings were estimated as the difference between current prices paid for water needs compared to post-intervention water bills. Information on current prices paid for water needs was obtained from interviews with the population, information provided by community leaders, and information collected at water sites. Information on post-intervention water bills was based on the NWSC's actual tariffs and the operating costs of the new water systems.

13. For the without-Project scenario, monthly payments were estimated based on a consumption of 67 L per household per day and the average price paid per jerrycan in each locality. For the with-Project scenario, monthly bills were estimated according to the tariff charged by the operator. For piped water connections, bills were estimated based on monthly consumption per household (about 10 m³) and the NWSC's current tariff per cubic meter. For standpipes, the bill was based on the number of jerrycans, and the current NWSC tariff per jerrycan. For localities not serviced by the NWSC, the monthly bill was estimated assuming the tariff equaled operating costs.

Saving Time Spent Fetching Water

14. The time spent fetching water will be reduced or eliminated.⁴⁸ Households' time was valued regardless of whether the time was paid or unpaid. Women and children are largely responsible for fetching water. Although they often do not have paid jobs, their time is valuable because it contributes to human welfare. The valuation of children's time is important because it affects the trade-off between children's economic contribution to households and school attendance. Women's time is also important because it affects the daily activities of all members of the family.

15. According to the NSDS, the average amount of water fetched per household per day is 67 L, or 3.3 jerrycans. Interviews revealed that two people per household were responsible for water collection. Information from the NSDS indicated that the time spent walking and waiting in line varied from 29

⁴⁸ A few beneficiaries residing in informal areas will be served through standpipes located close to their houses at a distance always lower than 500 m.



minutes to 68 minutes depending on the season (dry or wet) and the area (rural or urban). The value of time was estimated using the average monthly income in the targeted areas, UGX 227,832.⁴⁹ For the with-Project scenario, the beneficiaries using standpipes are expected to reduce their walking and waiting time to 15 minutes.⁵⁰

16. The value of time for the without-Project scenario was forecasted using current figures from the NSDS on the time spent fetching water.

Health Impacts

17. Health impacts were not measured due to lack of information.

Environmental Impacts

18. The valuation of GHG emissions generated by the Project were measured using the shadow price of carbon.

19. Financial benefits consisted of increased revenue from an increased number of customers and higher levels of water billed.

Costs

20. About 97 percent of the Project's investments will be in water and 3 percent will be in sanitation. O&M costs were based on operating costs of existing systems and those generated by the Project.

A.1. Component 1

21. The evaluation was conducted for interventions in a rural area (Nyamugasani) and interventions in refugee settlements. Additionally, the analysis incorporated the results of cost-effectiveness analyses previously conducted for solar pumping systems in Uganda.

Rural Subcomponent

22. This subcomponent consists of (a) gravity flow schemes for the Nyamugasani water system (Kasese district) and the Bitsya water system (Buhweju district) and (b) solar-powered water systems in select rural communities.

Nyamugasani Water System

23. The Project area consists of the following sub-counties in the Kasese district:⁵¹ Kyarumba, Kyondo, Mukunyu, Muhokya, Lake Katwe, and Kisinga. The total population is about 229,000. In the Project area,

⁴⁹ The average income corresponded to small towns around Mbale, according to Mbale-Environmental Report ESIA Scoping-December 2016. The report presents the following figures for the average monthly income at 2015 prices in the growth centers around Mbala: UGX 87,000 in Tirinyi and Kibuku, UGX 181,000 in Butaleja and Busolwe, and UGX 486,000 in Budaka. The average income weighted by population and transformed to 2017 prices corresponds to UGX 227,832.

⁵⁰ Feasibility study.

⁵¹ Most of the information was taken from ACES Consulting Group Ltd. Environmental Social Impact Statement for the



59 percent of the population uses open water sources, 24 percent uses boreholes, and the rest depends on protected springs and open wells. Only 2 percent has access to piped water. Most of the residents (64 percent) have to travel over 500 m to access their water sources and 86 percent use less than one jerrycan per person per day (approximately 10 L per person per day). This level of consumption indicates the difficulty of accessing water sources. Existing water stand taps are active only some days of the week. Water on these taps does not flow during the dry season, leaving the communities dependent on polluted lake water or purchasing relatively clean water from locals at UGX 2,000 per 20 L jerrycan. Kasese is among the four districts that contribute to 61 percent of the cholera cases in the country.

24. The expected cost of the intervention is US\$9.9 million. The first phase will benefit a population of 129,890 or about 25,000 households. The investment cost per connection is about US\$400.

Economic Benefits

25. **Prices paid for water.** For the without-Project scenario, the price paid was calculated using the actual figures of prices paid in the Project area. For the ‘with-Project scenario’, the price corresponds to the bill the beneficiaries will pay for service, which is based on a tariff that covers operating costs.

26. **Savings in travel time.** The without-Project scenario assumed the following: (a) minimum income per household of UGX 136,000 per month⁵² and (b) about 1 hour per day spent fetching water. After the Project, beneficiaries utilizing standpipes will only spend 15 minutes fetching water. Beneficiaries with piped water connections will no longer need to fetch water.

27. Expected savings in both price paid for water and savings in travel time per household will vary from UGX 400,000 to UGX 700,000 per year depending on the type of service received.

Table 4.4. Coping Costs of Getting Water and Value of Time (UGX, thousands per Household per Year)

	Before the Project		After the Project	
	Without Water Service	With Water Service	Standpipes	With Water Service
Value of time	579	344	155	—
Price paid for water	331	165	37	134

28. Results show that interventions in Kasese will generate benefits of US\$37 million, 88 percent of which corresponds to savings in travel time and 12 percent to savings in price paid for water, during the lifetime of the interventions.

Table 4.5. Present Value of Benefits - Nyamugasani

	Present Value (US\$, thousands)	%
Value of time	32,692	88
Price paid for water	4,516	12

Nyamugasani Water Supply and Sanitation System in Kasese District.

⁵² Which corresponds to the minimum wage, as the main occupation in the region is in the agriculture sector.



	Present Value (US\$, thousands)	%
Total	37,208	100

Results of the Economic Evaluation

29. The results of the economic evaluation show net benefits of US\$23.8 million with a return of 28.6 percent. Benefits are about three times the costs.

Table 4.6. Results of Economic Evaluation - Nyamugasani

	Present Value of Flows (US\$, thousands)			IRR (%)
	Costs	Benefits	Net Benefits	
Interventions in Nyamugasani	13,368	37,208	23,840	28.6

Financial Evaluation

30. The operation of the works for rural and small towns will be implemented under the UWA model. In this model, the following guidelines will be applied to ensure financial sustainability: all connections will be metered, the tariff should cover O&M costs, the UWA will be responsible for overall management and supervision of the WSS activities, and the operation will be awarded to a private operator and overseen by the UWAs.

31. Under this model, the GoU is planning on gradually making the water supply systems self-financing. The UOs will collect reliable data to estimate tariffs that not only fully cover O&M costs, but also include a percentage to contribute to their investment and overhead costs. Each scheme will have its own tariff according to the type of system (GFS or pumping system) and source of energy: solar/grid/diesel. For a certain time, UWA staff and investments (for example, major repairs and electromechanical components) will be subsidized. To avoid unaffordable tariffs, pro-poor progressive tariffs will be introduced.

32. The financial evaluation, following current GoU guidelines, was run using a tariff that covers operating cost. Results show that revenues will cover operating expenses, leaving a margin of 4 percent to fund investment. However, at this point, the tariffs and operating costs are preliminary. During implementation, a detailed financial evaluation will be conducted using reliable data on operating cost to determine the required tariffs.

Table 4.7. Results of Financial Evaluation - Nyamugasani

	Present Value of Flows (US\$, thousands)		
	Costs	Revenues	Net Margin
Including investment and O&M	15,024	6,067	(8,957)
Including only O&M	5,823	6,067	244



Solar and Water Initiative

33. This scheme supports the construction of water systems that utilize solar energy. Solar-powered schemes are often financially, operationally, and environmentally superior to diesel-powered generators. In Uganda, imported solar panels are not taxed, there is technical expertise in the private sector, and donors have given wide support to solar solutions.

34. The specifics of the solar-powered systems financed by the Project will be established during implementation. This evaluation reviewed cost-effectiveness analyses that compared costs of solar-powered schemes with diesel-powered generators in Uganda. Results showed that although solar-powered schemes have higher investment costs, they are the least-cost option given that O&M costs are about a third of diesel generators' energy costs.

35. Since 2002, the GoU has been implementing the World Bank-funded, three-phased Energy for Rural Transformation project. The Project assists the MWE in improving water supply services by identifying and providing least-cost energy solutions (including solar power) to water schemes in remote, off-grid areas. A financial and economic analysis conducted for the water schemes supported under the project showed that the O&M costs for diesel were US\$0.27 per m³ of water pumped with associated energy costs of US\$0.42 per kWh. By comparison, O&M costs for solar photovoltaics were only US\$0.07 per m³ with energy costs of US\$0.116 per kWh.

36. The 2016 Armstrong and Nakafeero⁵³ life cycle analyses indicate that long-term savings on fuel and capital maintenance make solar pumping systems more cost-effective than alternative mechanized pumping systems. The 2017 Humanitarian Aid and Civil Protection Report⁵⁴ showed similar results. Although the investment costs are higher for solar than for the fuel-generated schemes, the study concluded that operating costs are significantly lower for solar schemes. The total cost of the solar alternatives assessed were 66 percent lower than the diesel generators' costs. The average breakeven point for solar investments was only of 1.1 years, and its operating cost was just one-third of the generators. When analyzing the costs of the solar-powered systems already in operation in Uganda, the study showed that the average breakeven point for a solar investment versus a stand-alone generator was 2.6 years. The average reduction of expenses in installation and O&M costs was estimated at 40 percent. The Humanitarian Aid and Civil Protection team found that the single most important barrier toward successful 'solarization' of water points is the low level of technical expertise on solar energy among WASH stakeholders. To cope with this problem, the Central Government/MWE through the Rural Water and Sanitation Department (RWSD) will lead implementation of this activity.

Support to Districts Hosting Refugees

37. This subcomponent will focus on the northern districts of Yumbe, Arua, Moyo, and Lamwo, which have several hosting communities and refugee settlements. The subcomponent is expected to serve the design population of approximately 485,939 people (83 percent from host communities and 17 percent

⁵³ Armstrong, A., and R. Nakafeero. *Using Solar Water Pumping for Development-oriented Relief in Refugee Settings in Uganda*. 39th WEDC International Conference, Kumasi, Ghana, 2016. Briefing Paper 2500.

⁵⁴ Humanitarian Aid and Civil Protection. *Visit Report-Solar Water Systems. Refugee Settlements in Northern Uganda-January 10 to February 6, 2017*.



refugees). The total cost of the intervention, which includes catchment management and restoration activities, is US\$72 million. The investment cost per person is US\$148.

38. According to the UNHCR, the total amount of water in refugee settlements in Uganda is about 16 L per capita per day (lpcd), which is lower than the recommended 20 lpcd. Access to safe water sources is difficult. Most of the water systems consist of deep boreholes (71 percent). Water is collected from point water sources. About 23 percent of the water supplied in the refugee settlements comes from water trucks.

39. The communities face numerous challenges given the lack of water. For example, the people of Lomunga Trading Centre in Kululu Sub-county in Yumbe District have one borehole that is 300 m away from the center. During dry spells, the borehole is crowded, and women and children have to wake up at 2 a.m. to walk over 3 km to alternative unprotected water sources around their villages. Women and young girls have been raped and sexually harassed in the process. In areas where safe water sources are insufficient (for example, Yumbe, which has 45 percent access), most of the people must look for alternative water sources, most of which are unprotected (wells, streams, and rivers) and unsafe for human consumption. In normal situations when communities have a protected source close to them, they have to pay a flat fee of up to UGX 1,000 per month per household for water, but when there is no protected water source nearby, people pay water vendors between UGX 1,000 and UGX 5,000 for a 20 L jerrycan of water.

Economic Benefits

40. *Prices paid for water.* For the without-Project scenario, the prices were estimated considering that 23 percent of the water for the refugees is provided through trucks. Although the refugees are not charged, the MWE has to pay the transportation costs. The rest of the water is bought from private vendors at prices ranging from UGX 1,000 to UGX 5,000 per 20 L jerrycan. For this evaluation, a price of UGX 1,000 per jerrycan was used to be on the conservative side. For the with-Project scenario, the price corresponded to the bill they will pay for service after the intervention.

41. *Savings in travel time.* Savings were estimated assuming the following: (a) household minimum incomes of UGX 136,000 per month⁵⁵ and (b) 56 minutes per day spent fetching water.⁵⁶ After the Project, beneficiaries utilizing standpipes will only spend 15 minutes fetching water. Beneficiaries with piped water connections will no longer need to fetch water.

Results of the Economic Evaluation

42. The results of the economic evaluation show net benefits of US\$80,304 million with a return of 17.2 percent. The benefits are about twice as much as the costs.

⁵⁵ Which corresponds to the minimum wage, because the main occupation in the region is in the agriculture sector.

⁵⁶ NSDS.



Table 4.8. Results of Economic Evaluation - Refugee Settlements and Host Communities

	Present Value of Flows (US\$, thousands)			IRR (%)
	Costs	Benefits	Net Benefits	
Refugee and host communities	99,520	179,824	80,304	17.2

Financial Evaluation

43. At present, the refugees do not pay for water; so, no financial evaluation was carried out.

A2. Component 2

44. This component will improve WSS services in Mbale, Adjumani, and Gulu. This evaluation was conducted for interventions in Mbale and Adjumani.

Mbale Water System

45. A population of about 380,000 inhabitants resides in the Project area, which consists of (a) the Municipality of Mbale; (b) surrounding areas through the north, northwest, and south; and (c) six small towns (Busolwe, Butaleja, Kadama, Budaka, Kibuku, and Tirinyi).

46. In Mbale Town, the NWSC provides service. Only 32 percent of the population is served with water and 14 percent with sewerage connections. The water service relies on two WTPs, Bungokho and Manafwa, whose capacity is not enough to serve the population. The catchment areas (Manafwa, Nabijo, and Nabuyonga intakes) suffer from frequent silting, especially during the rainy season, as well as increasing treatment and maintenance costs. The piped network is not working properly, presenting frequent bursts and leakages. As part of the sewerage system, there are two WWTPs, Doko treatment ponds and Namatala Wetland, built in 1968 and 1986, respectively. Even though they are in fair condition, they are facing problems related to lack of proper maintenance and high levels of infiltration when it rains.

47. There are six small towns, with a population of about 67,000 inhabitants, that are also included in the Project. The major sources of water in the towns include boreholes, protected springs, ponds, and traditional wells. In Tirinyi, Kibuku, and Busolwe, 17–20 percent of households have piped water and receive service from private vendors; yet, the supply is not enough, and they also rely on the sources the rest of the population relies on, that is boreholes fitted with hand pumps, shallow wells, hand-dug wells, rainwater harvesting, rivers, and water vendors. In Budaka, 70 percent of residents get water from hand pumps fitted on deep-drilled wells, and 30 percent from ponds, traditional wells, or protected springs. In Butaleja, 84 percent of the population relies on boreholes and 16 percent on other resources.

48. In all the towns, residents and institutions rely on on-site sanitation facilities, mainly simple pit latrines and a few Ventilated Improved Pit latrines.⁵⁷ According to CES Consulting Engineers,⁵⁸ most of the institutions have inadequate sanitation facilities, both in number and quality and provide little

⁵⁷ A Ventilated Improved Pit latrine is a pit latrine with a back pipe (vent pipe). It is an improved latrine because it reduces mosquitos and unpleasant odors.

⁵⁸ CES Consulting Engineers Salzgitter GmbH. 2015. *Consulting Services for Detailed Design for Mbale Water Supply and Sanitation Project (Small Towns: Butaleja-Busolwe and Budaka-Kadama-Tirinyi-Kibuku). Design Report.*



opportunity for handwashing. In Tirinyi and Kibuku, two new public toilets have been constructed, but they are not yet functional. Other than those two toilets, there are no appropriate public sanitation facilities in any of the growth centers. The most common method of wastewater disposal is by dumping it in the yard (24 percent), followed by dumping it in soakaway pits (22 percent). Most towns have problems related to stagnant water.

Interventions Planned for Mbale

49. The activities planned for Mbale aim to ensure adequate and sustainable water provision for Mbale Town and six small towns/RGCs until 2040 through the development of new infrastructure as well as the rehabilitation and expansion of existing systems. Focus will be placed on utilizing raw water sources more sustainably and increasing energy efficiency of the system. Water works include the construction of a river intake, a transmission line, a distribution main, and networks. Sanitation activities include the construction of sewerage networks and a fecal sludge treatment plant and rehabilitation of the wastewater lagoon system. The Project will also include interventions for catchment management and source protection, such as restoration and revegetation of river banks. The small towns will be provided with gravity water supply from the Mbale water system.

50. The Project expects to increase water coverage from 32 percent to 86 percent. It will benefit 40,000 people with sewerage service.

Table 4.9. Water and Sanitation Service Indicators with and Without Project - Mbale

	Current Situation	With Project
Total population (Mbale and surroundings)	380,000	380,000
Population served with water	120,000	325,000
Water coverage	32%	86%
Informal settlements	40,000	40,000
Water coverage	0%	100%
Number of public stand posts	—	43
Population served with sewerage - Mbale Municipality	14%	40%
Population served with sewerage	14,000	40,000

Costs

51. **Costs of interventions.** The cost of the intervention is US\$41.1 million, of which 85 percent is for water systems (including protection of catchment) and 15 percent is for sanitation. The investment cost was included in the with-Project scenario. The evaluation was conducted using total investment cost (water and sanitation) but only benefits from water interventions were included.

Table 4.10. Investment Cost - Mbale (US\$, millions)

Expansion and improvement of WSS	39.4
Protection of catchment	1.7
Total investment cost	41.1



52. **Operating costs** were based on financial reports of the Mbale water production system, which in 2017 corresponded to about UGX 2,700 per cubic meter of water produced. The operating costs were projected using the unit cost and the volume of water produced in each scenario (with and without Project).

53. **Treatment costs, desilting, and cleaning filters.** Treatment cost for the NWSC was on average UGX 131 per cubic meter produced. Total cost of desilting and cleaning filters in the Mbale production system was UGX 42 million in 2016 and UGX 50.7 million from January to September 2017. There was no specific information on the increase of treatment costs and desilting and cleaning filters caused by lack of proper protection of the catchment and so the benefit was run under different scenarios of improvement.

Economic Benefits

54. Benefits resulting from the reduction of the price paid for water were estimated as the difference between prices currently paid (using the lowest price at water points, UGX 500 per jerrycan) minus the future bill to pay, which was calculated using the NWSC’s tariffs (about UGX 31 per jerrycan). Benefits resulting from reduction of time spent fetching water were estimated based on information provided by the NSDS, which corresponds to about 1 hour for the without-Project situation to 15 minutes for standpipes in the with-Project situation.

55. Results show that on average, a household in an informal area will save about UGX 700,000 per year in time previously spent fetching water and UGX 570,000 in the price paid for water. Savings in the formal areas are UGX 570,000 and UGX 300,000, respectively.

Table 4.11. Coping Costs of Getting Water and Value of Time (UGX, thousands per household per Year)

	Informal Areas			Formal Areas		
	Before Project	After Project	Savings	Before Project	After Project	Savings
Value of time	970	260	710	577	—	577
Price paid for water	608	37	571	608	309	300

56. Results show that the interventions in Mbale will generate expected benefits of US\$94 million, of which 64 percent corresponds to savings in the price paid for water and 36 percent corresponds to savings in travel time. Benefits from savings in treatment and desilting costs share less than 1 percent of total costs and their potential impact is negligible. More information is needed to include accurate figures on the impact of the interventions in the catchment.

Table 4.12. Present Value of Benefits - Mbale

	Present Value (US\$, thousands)	%
Value of time	34,138	36
Price paid for water	59,716	64
Total	93,854	100



Results of the Economic Evaluation

57. The economic evaluation shows sound results. Benefits are about 35 percent higher than costs. The expected net benefit from the intervention is US\$23,068 million and the expected return is 12.5 percent. This is higher than the discount rate used for discounting the flows along the lifetime of the Project.

Table 4.13. Results of Economic Evaluation - Mbale (US\$, thousands)

	Present Value of Flows			IRR (%)
	Costs	Benefits	Net Benefits	
All interventions in Mbale	70,786	93,854	23,068	12.5

58. The results are reassuring given that neither the benefits from sanitation nor the additional benefits on public health were included.

Financial Benefits

59. Financial benefits were estimated as the increase in revenues generated from a higher number of customers and an increase in the volume of water billed. The tariff used was UGX 2,855 per cubic meter billed, which corresponds to the average revenue per cubic meter billed in Mbale Town.⁵⁹

Costs

60. Operating and investment costs of Mbale were included in the financial evaluation. Operating costs were projected assuming that the unit cost per cubic meter produced would be constant over the lifetime of the interventions. The unit cost, however, may be reduced given that the Project is expected to generate efficiencies.

Results of the Financial Evaluation

61. Financial figures from the NWSC show that revenue in Mbale will cover operating costs and leave 8 percent for investment costs, although full recovery cost (including investment) will not be attained from revenues. Analysis of the projected cash flow of the NWSC over the next 10 years is provided under Table 4.29.

⁵⁹ Financial figures of NWSC.



Table 4.14. Income Statement, Operation in Mbale

(UGX, millions)	FY Ending at				
	June12	June13	June14	June15	June16
Revenue from Operations ^{a/}	3,503	3,919	4,018	5,964	6,751
Operating expenses	2,537	2,845	3,963	4,426	5,434
Operating margin (EBITDA)	966	1,074	55	1,538	1,317
Depreciation and amortization	573	559	577	712	746
<i>Net Income</i>	<i>394</i>	<i>515</i>	<i>(523)</i>	<i>826</i>	<i>571</i>

^{a/} Operating revenues consist of water and sewerage charges, connection fees, and other fees related to service provision. Other income such as income grants, exchange rate gains, and investment income are included in non-operating revenues. The NWSC presents its income statements including as Income both operating and non-operating income.

Table 4.15. Results of Financial Evaluation - Mbale (US\$, thousands)

	Present Value of Flows		
	Costs	Benefits	Net Benefits
Including investment and O&M	78,497	50,223	(28,275)
Including only O&M	35,657	50,223	14,565

Adjumani Water System

62. Adjumani is in northern Uganda and hosts over 80 percent of the refugees in the country. Adjumani receives monthly inflows of over 29,815 refugees from South Sudan. Over 96 percent of the area’s water supply is from the West Nile, where pressure on water resources is high. Water in the region is provided from existing systems and from water delivered by trucking. The MWE estimates that in the West Nile region about 31 percent of water is delivered by trucking.

63. The current water supply levels do not allow refugees to meet their water needs. Refugees must wait in line for more than an hour to get water from either a borehole, water truck, or tap provided by humanitarian organizations. Many residents are forced to walk long distances to get water from dirty streams. The effects of lack of clean water have led to fights between locals and refugees for the resource. In August 2016, there was a cholera outbreak in the Pagirinya refugee settlement in the Dzaipi sub-county of the Adjumani district.

64. A population of about 60,000 people resides in the area, which consists of Adjumani Town Council, Pakele Town Council, Dzaipi Township, Ciforo, Agojo refugee settlement, Unna Parish (host community), Mungula refugee settlement, and Orungwa Parish (host community). The influx of refugees has had a negative impact on water quantities and the quality of sources nearby.

65. In Adjumani Town Council, the NWSC took over the water supply system in 2014. The source of water for the system includes five boreholes with a capacity of 1,700 m³/day; however, only three are in operation, and they experience frequent breakdowns and low power voltage, reducing their capacity to 450 m³/day. The system serves 65 percent of the population (39,000 people). The production per person per day, however, is just 15.3 L. The population with and without service must complete/meet their water supply needs from existing boreholes and ponds. Most of these sources are unprotected and unsafe.



66. Many of the water points are privately managed and water is sold at prices ranging from UGX 500 to UGX 1,000 per 20 L jerrycan. The price is significantly higher than the UGX 31 per jerrycan that the NWSC charges in its service area. Collection of water from point sources also involves walking long distances and waiting to fill containers.

67. In Pakele Town Council, the water supply system is managed by Pakele sub-county through an operator (Top Joy Technical Services). The source of water consists of one borehole that is powered by solar energy. The capacity of the system is 70 m³/day and average production is 63 m³/day. The system serves 204 households, which corresponds to 30 percent coverage. The amount of water produced per person per day is just 18 L. The population obtains the rest of the water from other water sources, most of which are unsafe and unprotected.

68. In Ciforo Township, the Ciforo subcounty manages water through a private operator. The source of water includes one borehole that is powered by solar energy. The capacity of the system is 50 m³/day and the average production is 37 m³/day. The system serves 114 active connections. The water is not treated, and the operation is affected by low and fluctuating voltage of the solar-powered system. The operator charges a standard rate of UGX 2,000 per cubic meter.

69. Agojo refugee settlement camp has a total population of 4,782 refugees. They currently use trucks to transport water from the Nile River. The water is not treated, and the trucking fleet experiences frequent breakdowns.

70. Mungula refugee settlement has a total population of 2,500. The population gets water for general use trucked from the Nile River. Water for drinking purposes is received from another refugee settlement that installed a WTP. The host community for the Mungula refugee settlement is Orungwa Parish, which has a population of 3,200 people.

71. In Dzaipi Township, the water system has a capacity of just 50 m³, which yields about 10 lpcd.

72. In 2016, the NWSC’s operating cost in Adjumani was UGX 3,300 per cubic meter produced (or UGX 3,800 per cubic meter billed). This cost is 65 percent higher than the average unit cost in the whole area served by the NWSC (about UGX 2,300 per cubic meter billed). The average revenue that the NWSC billed in the Adjumani area in 2016 was about UGX 3,000 per cubic meter billed, which was 21 percent lower than the cost. This explains the financial results of the operation, which showed net losses of UGX 100 million. The NWSC has a cross subsidy policy to compensate losses in some regions with profits from others whose cost is lower.

Table 4.16. Financial Results Operation – Adjumani (UGX, millions)

	NWSC
	2015–2016
Revenues	359.8
Operating costs	427.6
Operating margin	(67.8)
Depreciation	33.1
<i>Net income</i>	<i>(100.8)</i>



Interventions

73. The Project expects to enable the host districts in the region to cope with the challenges of providing safe water to their communities amidst emergency situations. It is expected that the Project interventions will increase both the amount and the quality of water delivered. The interventions will be operated by the NWSC. The design incorporates the MWE's recommendation of providing the districts hosting refugees with about 20 L per person per day.⁶⁰

74. The Project cost is estimated at US\$16.6 million and consists mainly of water interventions, with a small fraction for public toilets (eight in total). For this evaluation, the operating cost was based on information from the MWE on unit operating costs per district in small towns⁶¹ adjusted to 2017 prices (UGX 1,690 per cubic meter produced).

Economic Benefits

75. The economic benefits were measured as the sum of savings from decreased coping costs when water service improves, time spent fetching water decreases, and transportation costs (for trucked water) decreases.

76. The savings from decreased coping costs were estimated using the following assumptions: (a) UGX 500 paid per 20 L jerrycan in Adjumani and Pakele town councils; (b) free water in the refugee settlements; and (c) households will pay tariffs charged by the NWSC post intervention.

77. The value of time was estimated using the following assumptions: (a) average monthly income of UGX 294,000 per household;⁶² (b) 56 minutes per day spent collecting water in the districts hosting refugees and 33 minutes in the rest of the areas;⁶³ and (c) time spent fetching water post Project will be zero in intervention areas, with the exception of the refugee settlement and host communities, where residents will spend 15 minutes to fetch water from nearby standpipes.

78. The price of water trucking depends on the conditions of the road, the specific distance from the water source to the point of delivery, and the capacity of the truck. GIZ⁶⁴ estimated that the cost of trucking is between UGX 300,000 and UGX 500,000 per trip.⁶⁵ For this evaluation, the trucking cost was estimated at UGX 400,000 for a 10,000 L capacity truck.

⁶⁰ MWE. 2017. "Water and Sanitation for Districts Hosting Refugees in Northern Uganda. Project Proposal."

⁶¹ MWE. 2009. "Strategic Sector Investment Plan for the Water and Sanitation Sector in Uganda." The costs were adjusted to 2017 using the inflation rate during the period (55 percent).

⁶² UBOS. National Household Survey 2016–2017. Page 106. Average monthly income per household in the West Nile region.

⁶³ UBOS. NSDS 2016. 56 minutes corresponds to time spent in rural areas and 33 minutes corresponds to urban areas.

⁶⁴ GIZ. 2016. "Refugees and Water Resources Management in Northern Uganda."

⁶⁵ The same cost is obtained assuming the cost of the truck calculation was based on the price of 10,000 L water truck was US\$ 30,000, 7-year life span, 5 percent maintenance cost, plus repairs, gas, driver cost, and water from the NWSC. The resulting value is half as much what the humanitarian aid and civil protection reports in its assessment of solar water schemes.

*Results of the Economic Evaluation*

79. The economic evaluation shows sound results as benefits are 80 percent higher than costs. Net benefits are expected to be about US\$17 million and the rate of return is expected to be 18.6 percent.

Table 4.17. Results of Economic Evaluation - Adjumani (US\$, thousands)

	Present Value of Flows			IRR (%)
	Costs	Benefits	Net Benefits	
Interventions in Adjumani	15,884	33,151	17,267	18.6

80. Results are reassuring given that other benefits, such as the intervention's impact on public health, were not included.

Financial Benefits

81. The financial benefits were estimated as the increase in revenues generated from a larger customer base and an increase in the volume billed. The revenue per cubic meter billed used was UGX 2,700 per cubic meter, which corresponds to the average tariff charged in Adjumani plus other charges, such as connection payments.

Results of the Financial Evaluation - Adjumani

82. Results of the financial evaluation show that the operation will be financially viable as revenue will cover operating cost, yet revenue will not be enough to cover investment cost. The operation shows that revenues will cover operating cost leaving a remnant of US\$1.5 million during the lifetime of the Project.

83. The service will be provided by the NWSC, which increases the likelihood of financial sustainability. The investment costs will be funded by the NWSC through the IDA loan.

Table 4.18. Results of Financial Evaluation - Adjumani (US\$, thousands)

	Present Value of Flows		
	Costs	Benefits	Net Benefits
Including investment and O&M	18,529	5,369	(13,161)
Including only O&M	3,832	5,369	1,536

A.3. Summary

84. The expected benefits from the Project are US\$144,480 million with an expected return of 17 percent. All interventions yield positive returns, which range from 12.5 percent to 28 percent. Total benefits are about 50 percent higher than the costs, which gives ample room for uncertainties. Moreover, if the investment costs for Components 3 and 4 were included in the evaluation, the Project would still generate net benefits as high as US\$119 million with a return of 14 percent.



Table 4.19. Summary of the Economic Evaluation. (US\$, thousands)

	Net Benefits	IRR (%)
Component 1		
1.1 Support to Small Towns and Rural Growth Centers		
Nyamugasami WSS	23,840	28.6
1.2 Support to Districts Hosting Refugees	80,304	17.2%
Total Component 1	104,144	18.6%
Component 2. WSS in Large Towns and Support to Districts Hosting Refugees		
Mbale	23,068	12.5
Adjumani	17,267	18.6
Total Component 2	40,336	14.1
TOTAL	144,480	17.0%

B. Valuation of GHG emissions generated/reduced by the Project

85. GHG emissions are global externalities, which can be positive or negative, depending on the net impact of the Project.⁶⁶ This section presents the methodology used to estimate the GHG emissions and their valuation using the shadow price of carbon. The annex provides a summary of the analysis. The complete evaluation is included in the Project files.

B.1. Measurement of GHG emissions

86. Gross emissions are the emissions Project activities cause over its economic lifetime. These are compared to a baseline scenario.⁶⁷ The Project’s net emissions are the difference between the gross emissions and the baseline emissions. For each component of the Project, the GHG emissions were estimated in tCO₂eq using the World Bank’s Water Global Practice’s GHG Accounting Excel Tool.

87. **Assumptions.** All data were provided by the Task Team or calculated based on their inputs, except where noted. A 20-year economic lifetime was assumed for all Project activities. It was assumed that (a) the Project’s water supply investments in Nyamugasani would produce 1,042,900 m³ per year; (b) the water supply investments for the refugee communities under Component 1 would produce 16,467,000 m³ per year; (c) the system for Mbale would produce 2,293,000 m³ per year; (d) the Adjumani water supply system would produce 164,000 m³ per year; and (e) the system in Nyamugasani would use zero-emission gravity systems for conveyance to the WTP and distribution. In addition, the default values for the Water Global Practice’s GHG Accounting Excel Tool for the energy intensity of conveyance, treatment, and distribution were used given the lack of information on pumping. For all scenarios where source pumping

⁶⁶ If the net balance is a generation of GHG emissions, the Project is generating a negative externality. If the net balance is a reduction of GHG emissions, the Project is generating a positive externality.

⁶⁷ There are three primary approaches to defining a baseline counterfactual; the No Change Scenario assumes the status quo maintains, the Use of Past Trends approach extrapolates data from the recent past into the near future, and the Use of Future Trends approach uses advanced modeling to make projections about the future. Elements from any combination of these approaches may be used when defining a counterfactual.



would take place, proxy data⁶⁸ of a pumping height of 10.36 m with a reasonable pumping efficiency of 75 percent were used. Finally, all electricity consumed due to water supply and wastewater activities was assumed to be grid-connected electricity unless otherwise specified.

Results and Conclusion

88. The net emissions of the Project are estimated at –8,124 tCO₂eq, while the gross emissions are estimated at 209,538 tCO₂eq. On average, the Project will generate estimated net emissions of –406 tCO₂eq annually. The water supply activities in Nyamugasani are estimated to experience net emissions of 2,054 tCO₂eq, while the water supply activities in the refugee host communities covered under Component 1 will see total net emissions of –31,344 tCO₂eq. The water supply activities in Mbale will generate estimated net emissions of 5,503 tCO₂eq, while the water supply activities in Adjumani will generate estimated net emissions of –3,802 tCO₂eq. The wastewater collection and treatment activities in Mbale will generate estimated net emissions of 19,805 tCO₂eq. The main source of emissions reductions will be replacing water supply tanker truck use with piped systems in refugee host communities. Installing zero-emission gravity-based systems in Nyamugasani will also result in a reduction of net emissions.

89. Two other sources of net emissions reductions—solar energy installations and energy efficiency improvement activities—were not covered in this analysis. Data were not available because the engineering details of these activities are not yet defined. The rehabilitation of the wastewater treatment lagoon system in Mbale may also reduce emissions if it leads to better management of methane production under anaerobic conditions compared to the baseline scenario. This on-site data, however, were not available at the time of this analysis.

90. The net emissions for the water supply activities in Nyamugasani break down as follows: –7 tCO₂eq from water sourcing, –5 tCO₂eq from water conveyance, 1,752 tCO₂eq from electricity use for conventional water treatment, and –26 tCO₂eq from potable water distribution.

91. The net emissions for the water supply activities in the refugee host communities under Component 1 are as follows: –88,468 tCO₂eq due to ending water tanker use, 4,366 tCO₂eq from water sourcing, 4,135 tCO₂eq from water conveyance, 28,233 tCO₂eq from electricity use for conventional water treatment, and 20,390 tCO₂eq from potable water distribution.

92. The net emissions for the water supply activities in Mbale break down as follows: 508 tCO₂eq from water sourcing, 392 tCO₂eq from water conveyance, 2,673 tCO₂eq from electricity use for conventional water treatment, and 1,931 tCO₂eq from potable water distribution.

93. The net emissions for the water supply activities in Adjumani are as follows: –4,316 tCO₂eq due to ending water tanker use, –12 tCO₂eq from water sourcing, 41 tCO₂eq from water conveyance, 281 tCO₂eq from electricity use for conventional water treatment, and 203 tCO₂eq from potable water distribution.

⁶⁸ Based on the MWE's Water Supply Design Manual (Second Edition). The Republic of Uganda, MWE, *Water Supply Design Manual: Second Edition*, <https://www.mwe.go.ug/sites/default/files/library/Water%20Supply%20Design%20Manual%20v.1.1.pdf>, p. 8-12.



94. The net emissions for each step of the wastewater collection and treatment activities in Mbale break down as follows: 1,385 tCO₂eq from wastewater collection, 9,881 tCO₂eq from electricity use for overall wastewater treatment, 0 tCO₂eq from electricity use for wastewater discharge, 105,437 tCO₂eq from the use of wastewater treatment lagoons, 729 tCO₂eq from process N₂O emissions from wastewater treatment, 0 tCO₂eq from fugitive N₂O emissions from wastewater discharge, and -97,627 tCO₂eq from switching from communal latrines to sewers.

95. Table 4.20 summarizes the results.

Table 4.20. Net GHG Emissions Caused by the Project

Component	Description	Timeline (years)	Emissions Estimate (tCO ₂ eq)
Component 1	Nyamugasani Water Supply	20	1,714
Component 1	Refugee Host Communities Water Supply	20	-31,344
Component 2	Mbale Water Supply	20	5,503
Component 2	Mbale Wastewater Collection and Treatment	20	19,805
Component 2	Adjumani Water Supply	20s	-3,802
Total			-8,124

B.2. Shadow Price of Carbon

96. To value the net GHG emissions generated/reduced by the Project, this evaluation used the shadow price of carbon recommended in the World Bank guidelines,⁶⁹ which lies between US\$40 (low estimate) and US\$80 (high estimate) per ton of CO₂eq in 2020 and increases to US\$50–US\$100 per ton of CO₂eq by 2030. From 2030 to 2050, the guidelines recommend using the same growth rate of 2.25 percent per year.

97. Results show that the Project will generate a positive externality as it will reduce GHG emissions and avoid a cost of US\$85,000–US\$171,000. The increase in GHG emissions caused by the works in Nyamugasani, Mbale, and Adjumani will be offset by the reduction gained from works in the refugee communities.

Table 4.21. Value of Net GHG Emissions

(US\$, thousands)	Present Value of Shadow Price of Net GHG Emissions Generated by the Project	
	Low	High
Nyamugasani	34	68
Refugee communities	(620)	(1,240)
Subtotal Mbale	109	218
Adjumani	392	784
<i>Total project</i>	(85)	(171)

⁶⁹ World Bank. 2017 "Shadow Price of Carbon Guidelines."



B.3. Impact on the Results of CBA

98. The results from the valuation of GHG emissions were included in the CBA. Results show that the impact of GHG emissions is small. Expected returns are 17 percent for the whole Project with and without GHG emissions.

Table 4.22. Results of CBA Including and Excluding GHG Emissions

Net Economic Benefits	Net Benefit (US\$, thousands)			IRR (%)		
	Without GHG	With GHG		Without GHG	With GHG	
	Emission	Low	High	Emission	Low	High
Component 1						
Ngamugasani WSS	23,840	23,874	23,908	28.6	28.6	28.5
WSS Districts Hosting Refugees	80,304	79,684	79,064	17.2	17.1	17.3
Total Component 1	104,144	103,558	102,972	18.6	18.5	18.7
Component 2						
Mbale	23,068	23,177	23,286	12.5	12.5	12.4
Adjumani	17,267	17,659	18,051	18.6	18.8	18.2
Total Component 2	40,336	40,836	41,337	14.1	14.2	14.0
<i>Total</i>	<i>144,480</i>	<i>144,394</i>	<i>144,309</i>	<i>17.0</i>	<i>16.9</i>	<i>17.0</i>

C. Financial Analysis of NWSC

Financial Performance during the Last Five Years: Fiscal Years 2011–2012 to 2015–2016

99. The NWSC’s responsibilities have grown rapidly. In 2012, the NWSC was providing service to 23 towns; by 2016, the NWSC was providing service to 170 towns, and by January 2018 the number grew to 204. Since 2012, the population NWSC targeted has more than doubled.

Table 4.23. Indicators of WSS Provided by the NWSC

Indicators	FY Ending at				
	June 2012	June 2013	June 2014	June 2015	June 2016
Target population	3,377,240	3,838,004	4,421,084	5,486,378	7,502,874
Population served water	2,614,090	2,986,773	3,382,050	4,225,325	5,871,224
% Population served water	77%	78%	76%	77%	78%
Number of towns	23	28	66	110	170
Water produced (million m3)	86.6	87.3	93.8	99.6	106.0
Water supplied (million m3)	79.8	85.8	92.5	96.4	102.7
Water sales (million m3)	53.8	56.7	61.1	66.4	73.9
NRW	33%	34%	34%	31%	28%
Water connections	296,206	317,292	366,330	417,938	472,193



Indicators	FY Ending at				
	June 2012	June 2013	June 2014	June 2015	June 2016
% Micro-metering	99%	99%	99%	99%	99%
Sewer connections	17,653	17,888	18,810	19,045	20,355
Revenue collection rate (%)	95%	96%	96%	105%	97%

Source: NWSC Annual Reports.

100. The NWSC works under three-year performance agreements with the GoU, in which it must meet specific performance targets, including coverage, NRW, metering, and connection efficiency. The indicators show high levels of performance, with NRW reduced from 33 percent in 2012 to 28 percent in 2016, almost universal micro-metering, and revenue collection efficiency over 95 percent. The NWSC's financial performance shows net profit over the years, in a range of 3–10 percent of operating revenues.

Table 4.24. Income Statement NWSC (UGX, millions)

	FY Ending at				
	June 2012	June 2013	June 2014	June 2015	June 2016
Revenue from operations ^{a/}	143,010	159,350	171,413	196,951	258,483
Operating expenses	119,242	130,562	152,378	188,449	215,890
Operating margin (EBITDA)	23,768	28,789	19,035	8,502	42,592
Depreciation and amortization	18,897	19,592	21,852	23,780	26,160
Operating margin before interest	4,871	9,197	(2,818)	(15,278)	16,432
Non-operating Income	12,313	11,029	12,936	24,948	17,579
Interest	2,071	1,274	935	595	2,718
EBIT ^{b/}	15,114	18,951	9,184	9,075	31,293
Taxes	3,655	10,244	1,419	2,185	6,410
<i>Net Income</i>	<i>11,460</i>	<i>8,707</i>	<i>7,765</i>	<i>6,890</i>	<i>24,883</i>

^{a/} Operating revenues consist of water and sewerage charges, connection fees, and other fees related to service provision. Other income such as income grants, exchange rate gains, and investment income are included in non-operating revenues. The NWSC presents its income statements including both operating and non-operating income

^{b/} EBIT = Earnings before interest and taxes = Earnings before interest and taxes.

Table 4.25. Financial Indicators NWSC

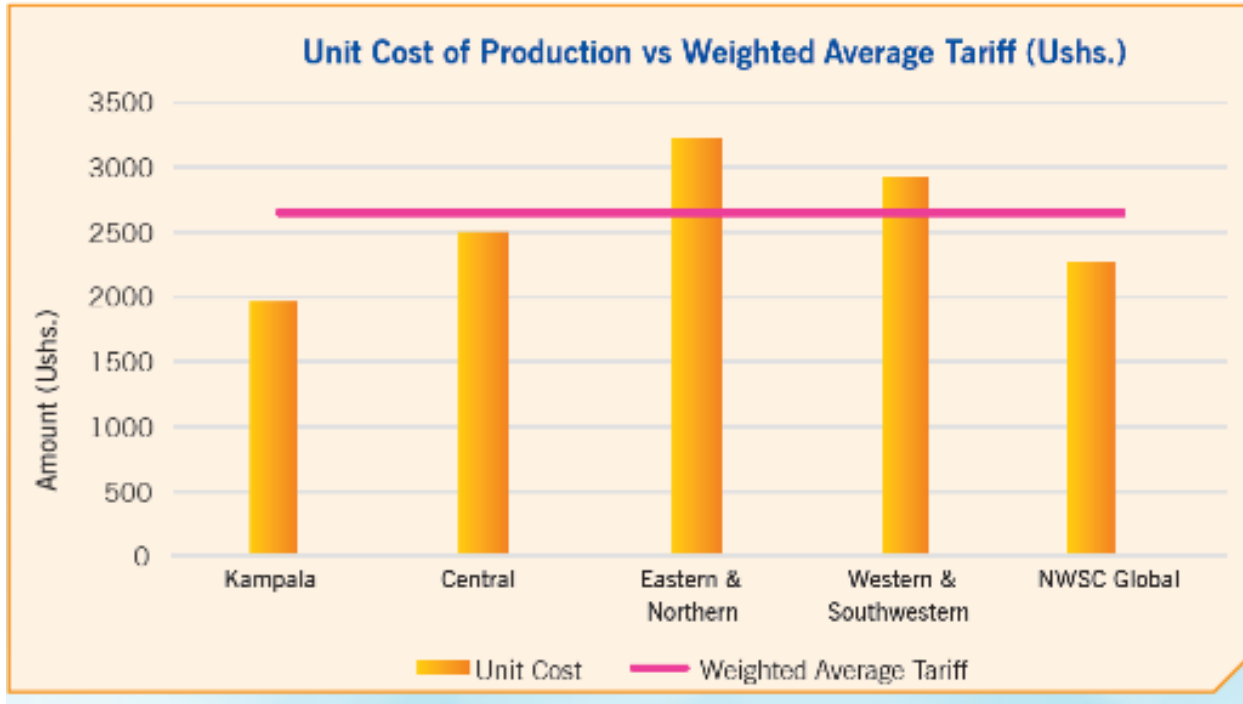
	FY ending at				
	June 2012	June 2013	June 2014	June 2015	June 2016
Cost recovery without depreciation	1.20	1.22	1.12	1.05	1.20
Cost recovery with depreciation	1.04	1.06	0.98	0.93	1.07
Operating margin (with depreciation)	3%	6%	-2%	-8%	6%
Net income margin	8%	5%	5%	3%	10%

101. Fluctuation of financial results may be due to the NWSC's expansion of service to towns where cost recovery is not achieved. Production costs vary across regions, while the tariff is the same regardless of the town/region. According to NWSC figures, current tariffs cover production costs in Kampala and the



Central region. In the other regions (Eastern, Northern, Western, and Southwestern), cost recovery is not achieved. About 80 percent of the NWSC’s revenues and operating costs are generated by Kampala and the Central region.

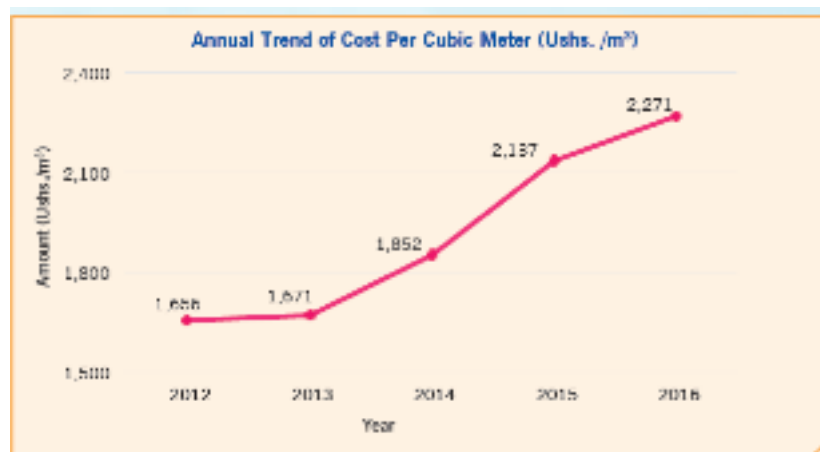
Figure 4.1. Cost of Production versus Weighted Average (UGX per m³)



Source: NWSC Annual Report 2015–2016.

102. The NWSC’s production costs have increased over the last five years by about 40 percent. Adjusting this increase for inflation (32 percent) results in an 8 percent real increase in production costs.

Figure 4.2. Cost of Production per Cubic Meter (UGX per m³)



Source: NWSC Annual Report 2015–2016.



103. The NWSC applies a uniform tariff policy across the country, differentiated only by the following customer categories: public standpipes, domestic, institutions/government, and commercial. Since 2004, the tariff levels have been subjected to automatic annual indexation against the domestic consumer price index (inflation), exchange rate, foreign price index, and electricity tariffs. The tariffs for the non-domestic customers is higher than the tariff for domestic consumers.

Table 4.26. Current Tariffs per Cubic Meter (UGX per m³)

	2015–2016	Price/Jerrycan	Water Connections	
	(UGX per m ³)	UGX per 20 L	Number	%
Standpipe	1,533	31	10,841	2
Domestic	2,490	50	382,874	81
Institutions/government	3,065	61	13,159	3
Commercial ^{a/}	3,760	75	65,319	14
<i>Weighted water tariff</i>	<i>2,668</i>	<i>53</i>	<i>472,193</i>	<i>100</i>

^{a/} The tariff for the commercial sector varies according to consumption: (a) up to 1,500 m³ per month, the tariff is UGX 3,760 per cubic meter and (b) higher than 1,500 m³ has a tariff of UGX 3,005 per cubic meter.

104. Although tariffs have maintained their real price, production costs have increased in real terms. The NWSC has counterbalanced this situation with efficiency gains. From 2012 to 2016, the NWSC successfully decreased NRW from 33 percent to 28 percent, increased collection efficiency from 95 percent to 97 percent and increased its clientele by 60 percent.⁷⁰ These efficiencies had a positive impact on financial performance, and by 2016, the NWSC was able to cover its operating costs (including depreciation) yielding an additional margin of 7 percent of operating revenues.

105. **Capital structure at the NWSC.** The NWSC’s 2017 balance sheet shows capital consisting of 64 percent liabilities and 36 percent equity. In 2016, liabilities consisted of (a) 1 percent to outstanding debts; (b) 76 percent to deferred income; and (c) 23 percent to accounts payable to suppliers and employees. The outstanding debts consisted of loans from the Stanbic Bank of Uganda and the Bank of Africa. The loan with the Stanbic Bank was signed in 2011 for a seven-year period, including a two-year grace period, at an interest rate of about 11.5 percent. It will be fully paid this fiscal year (2017–2018). The outstanding debt with the Bank of Africa corresponds to an overdraft, short-term loan for UGX 7.9 million.

Table 4.27. Balance Sheet – NWSC (UGX, millions)

	Fiscal Year Ending at					
	June 2012	June 2013	June 2014	June 2015	June 2016	June 2017
Assets						
Current assets	131,002	148,303	214,947	227,494	277,995	237,166
Non-current assets	506,655	536,047	587,759	729,972	971,224	1,171,838
Total assets	637,657	684,350	802,705	957,466	1,249,219	1,409,004
Liabilities						
Current liabilities	38,634	30,912	50,063	96,268	134,472	166,499

⁷⁰ The increase in the number of clients is explained mostly by the expansion of the service to small areas. However, some of these areas have higher operating cost, which bring lower financial returns to the NWSC



	Fiscal Year Ending at					
	June 2012	June 2013	June 2014	June 2015	June 2016	June 2017
Non-current liabilities	236,830	282,537	355,295	440,339	638,150	738,599
Total liabilities	275,463	313,450	405,358	536,607	772,622	905,098
Equity	362,194	370,901	397,348	420,859	476,597	503,905
<i>Total liabilities and equity</i>	637,657	684,350	802,705	957,466	1,249,219	1,409,004
Debt/assets ratio	43%	46%	50%	56%	62%	64%
Equity/assets	57%	54%	50%	44%	38%	36%

106. The NWSC's deferred income, which corresponds to 76 percent of total liabilities, reached UGX 590 billion in June 2016. From 2012 to 2016, the GoU-financed projects, whose assets are transferred to the NWSC, account for about UGX 500 billion. This is listed as a liability because under accrual accounting, the process of transferring funds to the NWSC has not been completed. On an annual basis, a portion of the deferred income is transferred to the NWSC and then it is listed as revenue from grants.

107. **Investment and financing sources.** In the five-year period from 2012 to 2016, the NWSC's investment was about US\$163 million, of which 98 percent was funded through grants from the GoU. The NWSC's main ongoing projects are Kampala Sanitation, Lake Victoria Water and Sanitation Project (Watsan project), and the Water Management Development Project (IDA).

Table 4.28. NWSC Investment and Financial Sources (US\$, millions)

	Fiscal Year Ending at					
	June 2012	June 2013	June 2014	June 2015	June 2016	Total
Investment	12.6	17.8	19.8	45.5	67.5	163.4
Grants	20.8	16.6	33.0	32.9	56.9	160.2
Grants/investment	100%	93%	100%	72%	84%	98%
Projects financed through grants						
Kampala sanitation	20.7	8.8	10.2	10.9	18.5	69.0
IDA-WMDP	—	—	6.0	4.9	16.8	27.6
Watsan AfDB/KfW/EU	0.1	6.3	15.0	15.8	20.8	58.0
Others	0.0	1.5	1.9	1.4	0.8	5.6
Total	20.8	16.6	33.0	32.9	56.9	160.2

Source: Calculation based on figures presented in the NWSC Annual Report 2015–16.

Projected Financial Situation

108. The NWSC projected its financial situation for the next 10-years. The capital investment requirement includes (a) implementation of the SCAP 100 program⁷¹ aimed at upgrading and expanding WSS services in small towns from the current 204 towns to 750 towns; (b) major capital improvement program in the existing service area to ensure water security and wastewater management; and (c) minor

⁷¹ The NWSC is implementing a project code named 'SCAP 100' which is intended to extend water to all villages in towns where the NWSC operates. The growth in SCAP100 financing requirements is in line with the envisaged expansion in geographical coverage from the current 230 towns to 750 towns in the next 10 years.



capital investment for refurbishment and rehabilitation to maintain operational efficiency. The NWSC financial projection also includes associated tariffs and projected operating costs. Tariff was kept the real value and operating costs were adjusted with efficiency gains based on information provided by the NWSC. The NWSC expects to reduce operating cost by reducing energy costs from solar power water supply schemes and gravity fed systems and by consolidating the number of decentralized operating units. Consequently, cost recovery will improve, yet not able to cover investment costs.

Table 4.29. NWSC Cash Flow Projections for 2018-2028 (UGX, millions)⁷²

Million UGX	2018/ 2019	2019 / 2020	2020 / 2021	2021 / 2022	2022 / 2023	2023 / 2024	2024 / 2025	2025 / 2026	2026 / 2027	2027 / 2028	Total 2018-2028
Income Statement											
Revenue	428,000	470,800	517,880	569,668	626,635	689,298	758,228	834,051	917,456	1,009,202	6,821,218
Operating Expense	308,000	335,720	365,935	398,869	434,767	473,896	516,547	563,036	613,709	668,943	4,679,422
Operating income	120,000	135,080	151,945	170,799	191,868	215,402	241,681	271,015	303,747	340,259	2,141,796
Interest	5,900	5,310	4,779	4,301	3,871	3,484	3,136	2,822	2,540	2,286	38,429
Net Income	114,100	129,770	147,166	166,498	187,997	211,918	238,545	268,193	301,207	337,973	2,103,367
Cost Recovery Ratio	1.39	1.40	1.42	1.43	1.44	1.45	1.47	1.48	1.49	1.51	1.46
Cash flow from Operation	2018/ 2019	2019 / 2020	2020 / 2021	2021 / 2022	2022 / 2023	2023 / 2024	2024 / 2025	2025 / 2026	2026 / 2027	2027 / 2028	Total 2018-2028
Net Income	114,100	129,770	147,166	166,498	187,997	211,918	238,545	268,193	301,207	337,973	2,103,367
Loan Repayment Principal	-	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	31,500
Net cash flow from operation	114,100	126,270	143,666	162,998	184,497	208,418	235,045	264,693	297,707	334,473	2,071,867
Investment and Financing Plan (Million UGX)	2018/ 2019	2019 / 2020	2020 / 2021	2021 / 2022	2022 / 2023	2023 / 2024	2024 / 2025	2025 / 2026	2026 / 2027	2027 / 2028	Total 2018-2028
Investment	757,733	758,825	771,712	825,167	845,843	868,369	892,921	919,689	948,886	980,741	8,678,927
Financed by:											
NWSC	85,900	92,967	109,031	162,998	184,497	208,418	235,045	264,693	297,707	334,473	2,071,868
Donors	570,597	585,234	295,954	570,597	570,597	570,597	570,597	570,597	570,597	570,597	5,705,970
GoU	101,236	80,624	366,728	91,572	90,749	89,354	87,278	84,399	80,582	75,671	901,089
Total	757,733	758,825	771,712	825,167	845,843	868,369	892,921	919,689	948,886	980,741	8,678,927

109. The cash flow resulting from operation will finance about 20 percent of total investment, and the 80 percent remaining will be financed from donors (70 percent) and the GoU (10 percent). The NWSC resources would be used to finance: (a) about 58 percent of the SCAP 100; (b) counterpart funds for all major capital improvement program financed by DPs to cover for the implementation of the RAPs and network connections; and (c) minor refurbishment and rehabilitation of water systems. It should be noted

⁷² Financial projection prepared and presented by NWSC.



that the current NWSC tariff is not a full cost recovery. Whereas the tariff can cover the operational costs, depreciation and some contribution to projects, it cannot fully cover the required investment costs

110. *Impact of the credit in NWSC financial projection.* At the time of Project preparation, the terms of how the GoU will transfer the credit to NWSC was not determined. To help the NWSC and the GoU in the decision-process, the impact of servicing the credit was measured in the financial projections presented by the NWSC. IDA financial conditions were applied for the evaluation, that is, service charge (interest) of 0.75 percent, maturity period of 38 years, and grace period of 6 years. The IDA amount corresponding to the NWSC is estimated at US\$87 million for this Project.

111. The first scenario was built estimating the required payments for 100 percent of the credit.⁷³ Results show that annual payments of principal and service charge would correspond to less than 1.4 percent of total annual revenues after 2025. When measured in the net income, the impact would be less than 4.5 percent. The annual payment of principal will be UGX 9,726 million, while service charges will be about UGX 2,300 million. For a total of about UGX 12,000M after 2025.

112. A second scenario was conducted using 25 percent of the credit on lending. Under the ongoing WMDP, the subsidiary agreement between NWSC and GoU was signed with a 25 percent on lending and 75 percent on granting to NWSC. Results show that annual payment of principal and service charge would be UGX 3,000M, or less than 1.1 percent of annual net income after year 2025.

113. Based on NWSC’s financing forecast (Table 4.29), NWSC is planning to invest from its own resources about UGX 200,000M in average per year to achieve its 10-year capital improvement plan. Therefore, in an on-lending arrangement, the NWSC would need to redirect about 2 to 6 percent of its committed resources annually after 2025 to pay the IDA credit.

Table 4.30. Payments Required to Service the IDA Loan of US\$ 87 million (UGX, Million)

Payments required to serve the loan	2020 / 2021	2021 / 2022	2022 / 2023	2023 / 2024	2024 / 2025	2025 / 2026	2026 / 2027	2027 / 2028
Service Charge	934	1,634	2,101	2,334	2,334	2,261	2,188	2,115
Principal	-	-	-	-	-	9,726	9,726	9,726
Total	934	1,634	2,101	2,334	2,334	11,987	11,914	11,841
% of debt service in total revenues	2020 / 2021	2021 / 2022	2022 / 2023	2023 / 2024	2024 / 2025	2025 / 2026	2026 / 2027	2027 / 2028
Service Charge	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.2%	0.2%
Principal	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	1.1%	1.0%
Total	0.2%	0.3%	0.3%	0.3%	0.3%	1.4%	1.3%	1.2%
% of debt service in net income	2020 / 2021	2021 / 2022	2022 / 2023	2023 / 2024	2024 / 2025	2025 / 2026	2026 / 2027	2027 / 2028
Service Charge	0.6%	1.0%	1.1%	1.1%	1.0%	0.9%	0.7%	0.6%
Principal	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	3.3%	2.9%
Total	0.6%	1.0%	1.1%	1.1%	1.0%	4.5%	4.0%	3.5%

⁷³ Impact of fluctuation of local currency was not included



D. Financial Analysis of UWA

114. The Regional Umbrella Model will be applied for works under the rural and small towns component. Under this model, the UWA staff (the Authorities) will manage a group of small water schemes, each run by local, private operators.

D.1. Current Financial Performance of Rural Water Schemes

115. The average O&M costs (scheme operator remuneration, electricity/fuel, chemicals, and routine maintenance) per cubic meter and tariffs are detailed in Table 4.31.⁷⁴

Table 4.31. Current Operating Costs and Tariffs Charged in Rural Systems

	Cost per m ³ Produced		Tariff per m ³ Sold	
	UGX per m ³	US\$ per m ³	UGX per m ³	US\$ per m ³
Solar power supply	1,161	0.32	2,524	0.70
Grid power supply	2,761	0.77	3,540	0.98
Diesel generator (as main source)	4,121	1.14	4,929	1.37
<i>Overall average pumping schemes</i>	<i>2,367</i>	<i>0.66</i>	<i>3,184</i>	<i>0.88</i>

116. To examine the current financial viability of these systems, the cost recovery rate was estimated by transforming the cost per cubic meter produced to the cost per cubic meter sold, using the current NRW level of 29 percent. Results show that solar power schemes cover all operating costs, yet the grid-powered supply systems fall short by about 10 percent. The GoU is planning to replace diesel-powered schemes with solar-powered systems.

Table 4.32. Cost Recovery Rate in Rural Water Systems

	Cost	Tariff	Cost Recovery Level
	UGX per m ³	UGX per m ³	
Solar power supply	1,635	2,524	1.54
Grid power supply	3,889	3,540	0.91
<i>Overall average pumping schemes</i>	<i>3,334</i>	<i>3,184</i>	<i>0.96</i>

117. If the actual collection rate of 75 percent is factored in, the cost recovery would be achieved only in the solar-powered systems. The grid-powered supply systems would cover only 60 percent of the operating costs.

D.2. Financial Projection of Regional Umbrella Model

118. To examine the financial sustainability of the rural systems managed through the Regional Umbrella Models supported by the Project, five subprojects were used as examples using information from design studies. These subprojects corresponded to Bisya (GFS), Nyamugasani (GFS), RGC solar water supply system, Kochi-Kaya (conventional water treatment and river intake), and Ala-Ora water supply.

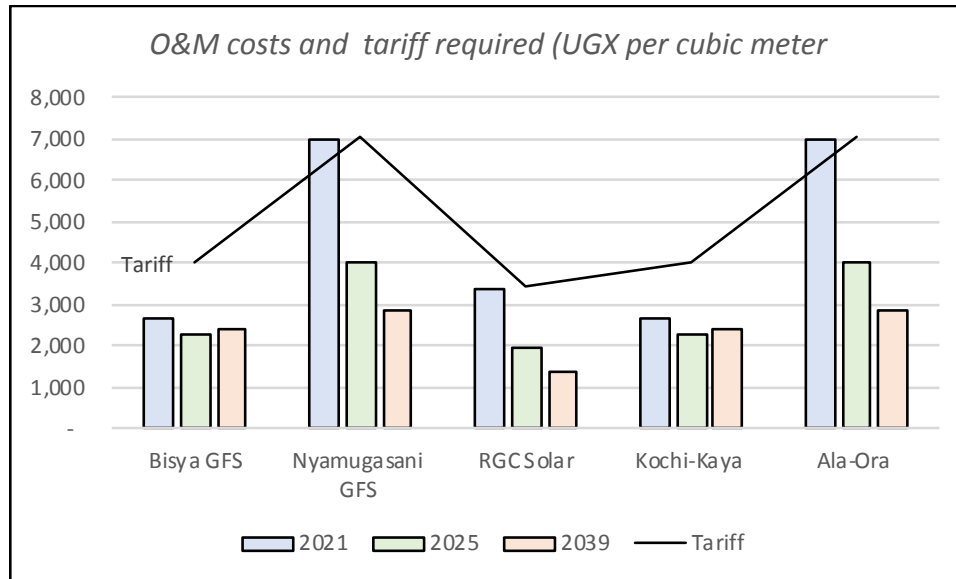
⁷⁴ These figures are supported by the Study on Real Cost of Water Supply in Small Towns & RGCs, *Hydrophil*, May 2014. 11 schemes commissioned between 2001 and 2013 were studied, between 215 and 1,677 connections.



119. In all the systems, the operating cost per cubic meter will decrease gradually as production increases. Right after the investment is implemented, fixed operating costs will weigh more in the total operating costs. The weight of these costs will, however, decrease as production increases. Figure 4.3 shows the expected operating cost per cubic meter produced in each of the systems for 2021, 2025, and 2039. In all cases, the highest cost occurs during the first period. The operating costs for Nyamugasani and Ala-Ora are 70 percent higher than the solar-powered systems and 45 percent more than Bisya's.

120. The tariff in each of these systems was not defined at the time of this evaluation, yet the MWE is planning to establish a tariff 25 percent higher than the operating cost to achieve full cost recovery and to partially fund investment costs. Tariffs were calculated following the MWE's guidelines and assuming a level of NRW of 29 percent. The resulting tariff varies per system from UGX 3,000 per cubic meter to about UGX 5,000 per cubic meter.

Figure 4.3. Operating Costs and Required Tariff in Some Systems Planned under Rural Component



Source: own calculations based on NWSC data

121. The resulting bills per household per month would vary from an estimate of UGX 10,000 to UGX 15,000.⁷⁵ The bill is expected to be affordable given that (a) it lies in the same range as current bills; (b) it corresponds to 5–6 percent of the monthly income of UGX 200,000–UGX 250,000—the income would be higher if the value of produce yielded from the customers' land, which is used either for self-subsistence or for selling at local markets, was included; and (c) the bills are significantly lower than the prices currently paid for water.

122. If the required tariffs are applied, the revenues will cover costs and the systems will be financially sustainable. The systems will show loss in the first years, but by 2025, all of them will be profitable, offsetting previous losses.

⁷⁵ For consumption of 3–4 m³ per month.



Table 4.33. Net Income Expected from Rural Water Systems Establishing Tariffs according to Guidelines

Profit (Loss) UGX, millions	Bisya GFS	Nyamugasani	RGC Solar	Kochi-Kaya	Ala-Ora
2021	17	(135)	(7)	17	(135)
2025	69	242	12	69	242
2039	95	705	34	95	705

123. The final figures will depend on actual costs and actual tariffs in each of the Regional Umbrellas. However, to ensure the sustainability of the works, the guidelines on setting tariffs in rural areas should include the following: (a) the tariff must fully cover operating costs leaving a margin of at least 25 percent to better manage and finance the service; (b) tariffs must adjust automatically to variation of costs; (c) efficiency gains must be required in operation and revenue collection; and (d) management contracts with mechanisms to ensure compliance must be signed with operators of water schemes.