THE REPUBLIC OF UGANDA
MINISTRY OF WATER AND ENVIRONMENT

Water, Sanitation and Hygiene (WASH) National Adaptation Plan for Uganda (2026-2030)

WASH National Adaptation Plan for Uganda
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FOREWORD

Climate change in Uganda is significantly impacting Water, Sanitation and Hygiene (WASH) services. Changes in rainfall patterns, including increased droughts and floods, are affecting water sources, sanitation facilities, and hygiene practices, with vulnerable populations like women and children facing disproportionate impacts.

Limited resources constrain the Government, private sector and communities to invest in climate-resilient WASH infrastructure, services and practices.

The National Adaptation Plan (NAP) for WASH is a crucial document that provides strategic guidance for climate change adaptation within the WASH sector and will guide long-term planning, investment, and action to build climate-resilient WASH infrastructure, services and practices while providing linkages with other sectors like health, nutrition, agriculture, education and disaster risk management.

The primary objective of NAP is to guide the reduction of the vulnerability to climate change impacts on WASH services while building adaptive capacity and resilience within communities and WASH systems.

Continuous learning, monitoring and evaluation is going to be crucial in understanding what adaptation actions work, how, and for whom, informing policy and practice by tracking, assessing, and learning from data and evidence throughout the NAP process. This iterative approach is going to enable the WASH NAP to be agile and responsive to changing contexts, technologies, and values.

Climate change adaptation in the WASH sector is a shared responsibility that requires collective action from government, development partners, civil society organizations, the private sector, and communities.

I therefore call for increased financial and technical resources to support the implementation of the WASH NAP. I also urge for sustained commitment and collaboration to ensure the effective implementation and monitoring of the NAP.

Hon. Sam Cheptoris
Minister of Water and Environment
The Republic of Uganda

ACKNOWLEDGEMENT

The development of the Water, Sanitation and Hygiene (WASH) National Adaptation Plan for Climate Change for Uganda (WASH NAP) has benefitted from the support and inputs of a wide range of stakeholders and partners.

Our sincere appreciation goes to UNICEF Uganda for the technical and financial support provided to the Ministry that led to the successful development of this first ever WASH NAP. I thank the Representative Dr. Robin Nandy, Deputy Representative Ms. Margarita Tileva and Chief WASH Environment & Climate Mr. Lalit Patra for their interest and guidance in the development of the WASH NAP.

Special thanks go to the decentralized structures of the Ministry, Catchment Management Organizations, District Local Governments and communities for providing insightful inputs and prioritization of adaptation options at regional and local levels.

We acknowledge the technical expertise of a team of experts led by Prof. Barasa Bernard that led the development of the WASH NAP. We also extend our sincere thanks to the technical review committee comprised of members from the MWE and other organizations namely Mr. Semambo Meddie, Eng. Wilberforce Kimezere, Ms. Fiona Ward, Eng. Elvis Mwesigwa, Ms. Monique Akullo, Mr. Seungwoo Nam, Eng. Annette Kezia Nantongo, Mr. Wanyama Wilberforce, Mr. Richard Musota, Eng. Wilfred Okello, Mr. Mutiibwa Robert, Ms. Anastasia Namululi, Ms. Martha Naigaga, Mr. Moses Asiimwe and Dr. Ricard Gine for providing credible inputs into the development of WASH NAP.

We are also grateful for the support provided by the WASH partners comprised of UWASNET, IRC, WaterAid, Water for People, Join for Water, Aid environment, and FCDO funded Global Water Leadership others towards the development of this WASH NAP. The inputs, feedback and comments received from them played a pivotal role in the refinement of the plan.

We also acknowledge the contribution from other Ministries, especially Ministry of Health and Ministry of Education and Sports for their input during the consultation process.

Finally, we are thankful to Dr. Callist Tindimugaya and Mrs. Margaret A. Mwebesa Commissioners in the Ministry for spearheading the WASH NAP development process and Mrs. Yunia Yiga Musaazi for mobilizing the Civil Society Organizations to support this initiative. Your diverse perspective ensured a holistic and inclusive approach to WASH adaptation planning.

This WASH NAP is a testament to collective effort, and we hope that the climate resilient WASH adaptation actions will contribute meaningfully to building resilient WASH governance systems, Resilient Water Resources and WASH infrastructure among others for the people of Uganda.

Dr. Alfred Okot Okidi
Permanent Secretary
Ministry of Water and Environment

EXECUTIVE SUMMARY

Background

Uganda's Water, Sanitation, and Hygiene National Adaptation Plan (WASH - NAP) 2026-2030 has been developed to reduce climate risk vulnerabilities by integrating adaptation measures to WASH infrastructures and service delivery systems. Integrated Water Resources Management (IWRM) remains essential to this adaptation plan to ensure protection of water resources. The priority adaptation actions are expected to be integrated into ongoing and future national programmes and plans.

The objectives of the WASH NAP include:

- To strengthen enabling environment for climate-resilient WASH infrastructure and service delivery
- To protect and restore climate-sensitive water resources and ecosystems to support water systems sustainably
- To guide the design and implementation of climate-resilient WASH infrastructure
- To enhance capacity of service providers to deliver reliable, efficient, and equitable climate-resilient WASH services.
- To promote climate-adaptive behaviors in communities for enhanced resilience.

The WASH NAP will contribute to the development of other sectors such as to the Food Security and Nutrition, as IWRM and ecosystem protection are integral to the plan. The plan will further support Education and Health sectors, as resilient WASH infrastructure in schools is expected to contribute to the attendance and retention of children, especially girls, in the schools apart from gaining health benefits. Resilient WASH service in health facilities will support infection prevention and control. Aspects of youth engagement and employment generation remain integral to the plan.

The WASH NAP provides a five-year roadmap for climate-resilient WASH development, aligning with Uganda's Vision 2040, the National Development Plan (NDP-IV), the Updated Nationally Determined Contribution (2022), the National Climate Change Act (2021) and the Sustainable Development Goals 2030. The development of WASH NAP involved nationwide consultation with extensive stakeholder engagement. The inclusive approach ensured the policy coherence and alignment with sector strategies such as the Uganda Water and Environment Sector Development Plan and the Catchment Management Framework.

Status of WASH Services in Uganda

According to the WHO-UNICEF Joint Monitoring Programme 2024, Uganda faces a persistent inequity between urban and rural WASH service coverage. Although the national basic water supply coverage stands at 63 per cent, the coverage in urban areas is 79.9 per cent, whereas in rural areas it is at 56.6 per cent. Access to at least basic sanitation stands at 23.89 per cent overall, with wide disparities, 32.55 per cent in urban areas versus just 20.64 per cent in rural areas. WASH in institutions such as in Schools and Health Care Facilities (HCFs) is equally challenging with visibly urban and rural divides. Only 12 per cent of rural schools provide basic hygiene services, compared with 44.64 per cent of urban schools (UNICEF and WHO, 2020). Similar deprivations are observed in WASH in HCFs, with 58.69 per cent HCFs with access to basic water supply, and 8.8 per cent HCFs with basic sanitation – rural-urban divides remain high with 56.28 per cent rural HCFs with basic water supply, as against 81.26 per cent urban HCFs with basic water supply, and 5.3 per cent rural HCFs with basic sanitation, whereas 15.1 per cent urban HCFs with basic sanitation.

Noting that impacts of climate change are mostly seen in the form of floods, droughts and landslides, several policies, strategies and plans have been developed to address potential adverse impacts. Some of these policies, strategies and plans include:

- Strategies related to climate change adaptation such as defining Nationally Determined Contributions (NDCs) and developing sector specific National Adaptation Plans (NAPs)
- Policies promoting protection of wetlands, rangelands, lake shores, riverbanks, and mountainous areas such as National Environment Act 2019
- Strategies on flood management supplemented with water harvesting
- Strategies on catchment management including watershed development and water source protection

- Establishment of a plan for early warning systems

Specific projects have been undertaken to enhance the resilience of the communities, with adaptive infrastructure and ecosystems. Most of these projects have been implemented with support from various bilateral and multilateral donors and international financial institutions. However, more investment is required to enhance climate resilience of WASH infrastructure and supportive ecosystem in Uganda.

Vulnerability of the WASH Sector

In Uganda, drought poses the most significant threat, with over three-quarters of boreholes, valley dams, and rainwater harvesting tanks exposed. Nearly half of all shallow wells and protected springs are vulnerable. This underscores that both surface water and groundwater dependent systems are at risk during prolonged dry spells.

Landslides also pose a significant threat to water and sanitation infrastructure, particularly in the mountainous areas of eastern and southwestern Uganda. Over 36 per cent of protected springs remain vulnerable due to their location on unstable slopes. Rainwater harvesting tanks and shallow wells also show moderate exposure, while boreholes, valley tanks, and valley dams are less frequently impacted. In addition to disrupting access to water, landslides often damage latrines and other decentralized sanitation systems, leading to direct contamination of surrounding land and water sources and leading to public health risks.

Flood-related exposure of the water sources is relatively low across Uganda, but the potential consequences are significant. Boreholes, shallow wells and valley dams show flood exposure, though the exposure is limited to only seven per cent. Protected springs and rainwater harvesting tanks are rarely affected by floods. Floodwater often flushes out latrines and overload wastewater systems, resulting in environmental pollution and contamination of water sources and drinking water supplies.

Uganda is experiencing shifting patterns of human mobility driven by climate change, including cross-border and internal displacement. In the face of droughts, floods, and landslides, mobility of affected people increases pressure on already strained WASH systems and natural resources, potentially fueling conflict over limited water access between host communities and migrant populations.

Prioritized WASH Adaptation Actions:

To ensure that Uganda's WASH systems are resilient to climate risks, five strategic result areas were identified, aligned with the core components of climate-resilient WASH as defined by the Sanitation and Water for All (SWA). These include: (1) Enabling environment with emphasis on climate action, (2) Protected water resources and ecosystems, (3) climate-resilient WASH infrastructure, (4) Built climate-smart service delivery systems, and (5) Resilient communities with climate-adaptive behaviors.

Enabling environment with emphasis on climate action:

- Strengthening the capacity of the Government supportive policies, guidelines and standards on climate-resilience WASH infrastructure and service delivery
- Enhance WASH sector financing and avenues for resource mobilization.
- Build institutional capacity and knowledge management support at all levels.
- Promote climate-smart WASH technology and innovations.
- Strengthen stakeholder coordination and information management

Protected water resources and ecosystems:

- Protection of water resources with aquifer recharge and watershed management
- Develop infrastructure to enhance water resources management
- Strengthening of catchment-based water resources management systems

Climate-resilient WASH infrastructure:

- Incorporating climate-resilient measures in WASH standards and designs
- Developing and maintaining climate-smart water supply and sanitation infrastructure

Built climate-smart service delivery systems:

- Strengthening the capacity of both public and private sectors for improved WASH service delivery
- Enhance emergency response capacity of WASH service providers

Resilient communities with climate-adaptive behaviors:

- Enhance knowledge, attitude and practices of communities on climate-resilient WASH practices with

established social norms
- Establish community-based early warning systems
- Enhanced water conservation and storage
- Strengthen local WASH markets with appropriate supply chains

To operationalize, the above prioritized WASH adaptation actions, an approximate funding need amounting to UGX 993,225,000,000, equivalent to USD 276,000,000, is estimated. The budget was developed in consultation with the development partners and sector experts. The estimate includes the cost of building of enabling environments, catchment management interventions, additional cost needed to make WASH infrastructure climate resilient, building of climate smart service delivery systems, and development of climate-adaptive behaviors for resilient communities with the leadership and support of the Ministry of Water and Environment, Ministry of Health, Ministry of Education and Sports, development partners, private sectors and CSOs. A detailed activity breakdown of the budget is also annexed to the main document.

Implementation Framework

The Ministry of Water and Environment is the lead agency responsible for implementing the WASH-NAP. A taskforce chaired by relevant departments within the ministry comprising technical representatives, UN agencies, CSOs, other development partners including private sector enterprises supporting the water and environment sector will be established.

While developing the framework a detailed participatory exercise has been carried out to respond to the reality of Uganda. The WASH-NAP implementation framework proposes five strategic actions to strengthen resource mobilization, sector development with public-private partnerships, strengthening national and subnational revenue collection and accounting systems, building institutions and their capacities, and strengthening community engagement to enhance community ownership and accountability.

- Establishment of a dedicated climate financing strategy for WASH with transparent access and utilization mechanisms at national and sub-national levels
- Promotion of Public-Private Partnerships to strengthen market-based instruments, including demand creation, supply chain strengthening and sector financing that attracts private sector participation
- Optimize revenue generation that includes regulation of taxes and tariffs systems meeting to equity to enhance the sustainable investment in the sector.
- Build institutional capacity for improved governance of the sector including development of resilient WASH infrastructure, service delivery, and resource mobilization, management and accountability
- Enhance community management of WASH services with supportive financing mechanisms to improve service delivery for climate resilience

The WASH NAP will be embedded in the development of WASH national and sectoral strategies, programmes, budgets and workplans. The adaptation priorities will be mainstreamed in to Nationally Determination Contributions, National Development Plans, and National Budget Framework Paper. The WASH NAP will influence national standards on WASH to incorporate elements for climate resilience and promote regular performance reporting.

At the subnational level, the WASH NAP will be operationalized through district development plans and district contingency plans to address climate related risk and vulnerability. Similar opportunities exist to influence catchment and watershed development plans for water resource protection. This needs to go further downstream to influence community action plans to enhance resilient WASH at public places and at households. Inculcation of WASH NAP at both national and subnational levels would require capacity and skill development at levels starting from line ministries, district technical teams and community structures.

Monitoring, Evaluation and Learning

The Monitoring, Evaluation and Learning (MEL) framework aims to systematically track progress, evaluate effectiveness and impact, and ensure accountability in implementing climate-resilient WASH strategies. This is to provide a structured approach to measure the outcomes of adaptation interventions, identifying challenges, and facilitating evidence-based decision-making to enhance sustainability and resilience. The objectives of the framework include

- Establish performance indicators to track water security, environmental sanitation, hygiene practices, and climate resilience and related risks
- Enhanced data collection and reporting mechanisms and facilitate incorporating adoptive measures
- Establish institutional responsibility that facilitates real-time monitoring and data collection to inform

decision making, policies, strategies and investments

- Assess implementation progress to ensure adaptation strategies incorporated in the WASH NAP are aligned to the plans
- Evaluate effectiveness, efficiency and impact of adaptation measures in improving access to and use of WASH services
- Ensure transparency in equitable resource allocation amongst the stakeholders
- Identify best practices and lessons learnt to support further development and scaling up

The MEL framework for Uganda's WASH NAP will be developed and operationalized through a structured and participatory approach. This will involve clear institutional roles, standardized data collection methods, continuous stakeholder engagement, and adaptive learning mechanisms. Information Communication Technologies (ICTs) will be harnessed to enhance effectiveness of the MEL process.

Way forward

Prioritized actions, implementation framework, and monitoring evaluation and learning sections in the WASH national climate adaptation plan provide an overview of needed actions to enhance sector resilience. In the prospectives of development partners, bilateral donors, climate funds and international financial institutions, this is expected to serve as a key reference document. All the related ministries in the Government of Uganda will use this document for planning, financing and minoring their investments.

Development of the WASH NAP is a milestone work, as this is the first ever WASH sector climate adaptation plan prepared by any Government. The WASH NAP is developed by the Government of Uganda with technical assistance of UNICEF and in collaboration with the development actors. The WASH NAP Uganda is expected to serve as a reference worldwide, as UNICEF continues to support other developing countries to come up with similar plans.

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ACRONYMS

AMCOW	African Ministers' Council on Water
CAF	Cancun Adaptation Framework
CBA	Cost benefit Analysis
DRDPM	Department of Relief, Disaster Preparedness and Management
DWRM	Directorate of Water Resources Management
ENR	Environment & Natural Resources
GCF	Green Climate Fund
GCF	Green Climate Fund
HWWS	Hand Washing with Soap
LEG	Least Developed Countries Expert Group
M&E	Monitoring and Evaluation
MAAIF	Minister of Agriculture, Animal Industry and Fisheries
MoEACA	Ministry of East African Community Affairs
MoEMD	Ministry of Energy and Mineral Development
MoES	Ministry of Education and Sports
MoFPED	Ministry of Finance, Planning and Economic Development
MoH	Ministry of Health
MoICT	Ministry of Information, Communications Technology and National Guidance
MoPS	Ministry of Public Service
MWE	Ministry of Water and Environment
NAPs	National Adaptation Plans
WASH-NAP	Water, Sanitation and Hygiene National Adaptation Plan
NDC	Nationally Determined Contribution
NDP	National Development Plan
NEMP	National Environmental Management Policy
CSOs	Non-Governmental Organizations
NWSC	National Water and Sewerage Corporation
SDGs	Sustainable Development Goals
SWA	Sanitation and Water for All
UBOS	Uganda National Bureau of Statistics
UIA	Uganda Investment Authority
UIRI	Uganda Industrial Research Institute
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
UNMA	Uganda National Meteorological Authority
URCS	Uganda Red Cross Society
WASH	Water, Sanitation, and hygiene
WSS	Water & Sanitation sub-sector

DEFINITIONS

Access to Safe Water: The ratio of people served by a safe water point and piped water supply to the total population (MWE Water Supply Atlas, 2025).

Adaptation Measures: Adaptation measures are considered to be "policies, strategies, actions, programs and projects that can prevent, mitigate or minimize damages or impacts associated with Climate Change and explore and take advantage of new opportunities from climate events"

Adaptive Capacity: The ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences of climate change (IPCC, 2023).

Climate Change is a change in climate, attributed directly or indirectly to human activity, that alters the composition of the global atmosphere and that adds to the natural climate variability observed over comparable periods of time.

Climate Hazards: Events or conditions resulting from climate or weather-related phenomena that have the potential to cause harm to people, property, and the environment (Zscheischler et al., 2020).

Climate Mobility: Movement of people or populations due to changes in the environment that are linked to climate change (GCCM, 2024).

Climate Resilient WASH: By definition, Climate-Resilient Water, Sanitation, and Hygiene (WASH) services anticipate, respond to, cope with, recover from, adapt to, or transform based on climate-related events, trends, and disturbances, all while striving to achieve and maintain universal and equitable access to safely managed services, even in the face of an unstable and uncertain climate, where possible and appropriate, minimizing emissions, and paying special attention to the most exposed vulnerable groups (SWA, 2024).

Drought: A recurrent feature of climate that occurs when there is an extended period of abnormal deficiency in precipitation (relative to what is considered normal) (Sivakumar & Wilhite, 2002).

Exposure: The situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas (UNISDR, 2017).

Flooding: An overflow of water that submerges land that is usually dry (Farida & Maswanku, 2022).

Functionality: The ratio of functional water sources to all water sources (MWE Water Supply Atlas, 2025). Sources not operating for five or more years are assumed to be abandoned and hence are not included in the calculation.

Handwashing: The act of cleaning hands with soap and water to remove dirt, germs, and harmful microorganisms (WHO, 2009).

Improved Sanitation: A sanitation facility that hygienically separates human excreta from human contact (WHO, 2023). Improved toilet facilities include flush toilets, VIP latrines, covered pit latrines with a slab and Ecosan.

Landslides: The sudden movement of soil material down a slope (Mertens et al., 2018).

Monitoring: It refers to the collection of relevant information on the progress and results of goals, actions, measures, projects, and programs. The monitoring plan defines its limits, quantification and data collection methodologies and procedures to ensure the quality of the data collected

Open defecation: The practice of defecating in fields, forests, bushes, water bodies, or other open spaces rather than using an improved sanitation facility (WHO, 2023).

Sensitivity: The socio-economic or demographic characteristics that can make people susceptible to the negative effects of exposure (Declet-Barreto et al., 2020).

WASH is a collective term for Water, Sanitation and Hygiene – relating to access to safe, water, improved sanitation facilities and basic level of hygiene maintained.

Vulnerability: The degree to which a system, community, or individual is susceptible to, and unable to cope with, the adverse impacts of climate change, including climate variability and extremes (IPCC, 2014).

CHAPTER
01

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INTRODUCTION

1.1 Background

Integrating climate adaptation into WASH infrastructure and services is long overdue. Globally, climate risks (flooding, drought and landslides etc.) continue to cause significant negative impacts on the WASH infrastructure and services. The concept of the National Adaptation Plans (NAPs) was first introduced as a part of the Cancun Adaptation Framework (CAF) in 2010, in a way, as the successor of the National Adaptation Programmes of Action (NAPAs). As a key policy document for adaptation planning efforts, the NAPs are expected to remain relevant under the new UAE Framework for Global Climate Resilience (Framework). This Framework was established at COP28 towards achieving the global goal on adaptation (GGA) after two years of intensive discussions under the Glasgow-Sharm el-Sheikh work programme (Mizuno & Okano, 2024).

As countries continue developing their NAPs in response to the experienced climatic devastating shocks, the WASH infrastructure and services remain vulnerable to the catastrophic risks. With these threats at hand, many national governments and partners have embarked on developing or supporting the compilation of national and sector-specific adaptation plans. Most of these plans are aligned with the Nationally Determined Contribution (NDC) documents such as an updated NDC 2022 for Uganda, Sustainable Development Goals (especially Goal 6 - Clean water and sanitation for all) and national planning frameworks such as Uganda Vision 2040, National Development Plan IV and District Development Plans at sub national levels among others. The alignment is meant to build the adaptive capacities and resilience of countries and sectors but also strengthen the integration of climate adaptation in the ongoing and future plans, budgets and workplans.

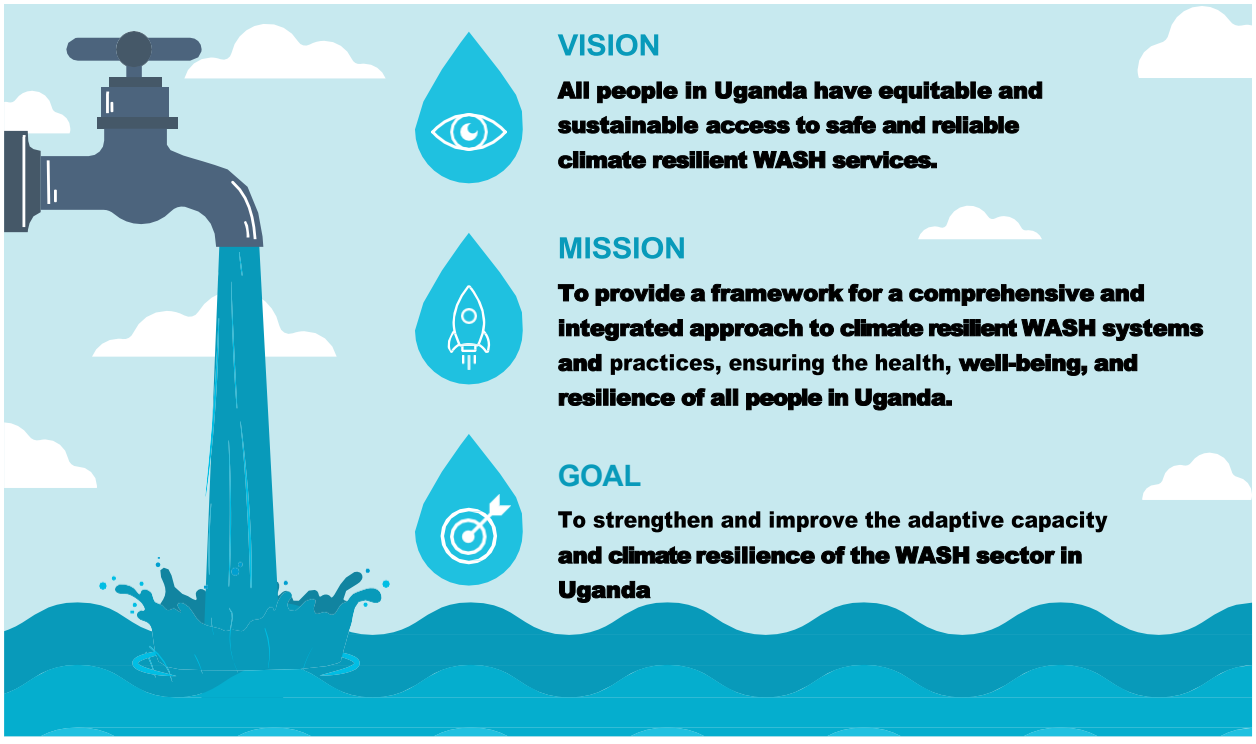
To be more sector specific, Uganda has further developed and operationalized two adaptation plans - and these are - the Agriculture National Adaptation Plan and Health National Adaptation Plan that have been aligned with national climate adaptation strategies with the aim of establishing long term funding mechanisms but also strengthening early warning systems. At the moment, despite the development of the national and sector plans, tracking the implementation of adaptation actions remains a challenge due to inadequate funding and information that meets the needs of a particular sector, for example, the WASH sub-sector, resulting in increased vulnerabilities to climate hazards. The noticeable attempts made in the country to strengthen climate-resilient WASH include developing the Climate Rationale for Climate-Resilient WASH Services in Uganda (MWE, 2024) and climate-resilient urban water systems in Uganda (2024). However, little attention has been paid to understanding the vulnerability of the WASH sector to climate risks that adversely impacts marginalized groups (children, women and disabled) and vulnerable communities such as refugees, and people residing in fishing villages and islands.

Thus, for purposes of this WASH National Adaptation Plan, Climate-Resilient Water, Sanitation, and Hygiene (WASH) services anticipate, respond to, cope with, recover from, adapt to, or transform based on climate-related events, trends, and disturbances, all while striving to achieve and maintain universal and equitable access to safely managed services, even in the face of an unstable and uncertain climate, where possible and appropriate, minimizing emissions, and paying special attention to the most exposed vulnerable groups (SWA, 2024).

The focus of this WASH National Adaptation Plan was therefore to assess the vulnerability of WASH infra-structure and services, and related water resources and ecosystems to climate change; development of priority adaptation actions to ensure climate resilient WASH infrastructure and services, water resources and ecosystems; advocating for WASH adaptation actions, and how to integrate WASH adaptation actions into existing or future plans. It is against this background that Uganda's first WASH National Adaptation Plan has been developed to reduce climate risk vulnerabilities by strengthening resilience and integrating adaptation into WASH systems.

1.2 Vision, Mission and Goal of the WASH-NAP

The WASH-NAP vision, mission and goal are presented below:



1.3 Objectives of the WASH-NAP

The objectives of WASH-NAP are:

1. **To strengthen the enabling environment for climate-resilient WASH infrastructure and service delivery.** This includes improving the policy and strategic framework, institutional capacity, financing mechanisms, and systems for planning, monitoring, and accountability.

2. **To protect and restore climate-sensitive water resources and ecosystems to support water supply systems sustainably.** The WASH-NAP aims to safeguard and enhance the availability and quality of water resources by strengthening catchment management, promoting nature- based solutions, and ensuring the sustainable use of aquifers, wetlands, and watersheds under changing climatic conditions.

3. **To guide the design and implementation of climate-resilient WASH infrastructure.** This includes adapting both new and existing water supply and sanitation systems to withstand climate-related hazards - such as droughts, floods, and landslides - ensuring infrastructure is reliable, inclusive, and sustainable in the face of growing climate variability.

4. **To enhance the capacity of service providers to deliver reliable, efficient, and equitable climate resilient WASH services.** The WASH-NAP supports improved service delivery through climate-smart operations, strengthened emergency preparedness, local market development, and innovation, with particular attention to underserved populations and fragile settings.

5. **To promote climate-adaptive behaviours in communities for enhanced resilience.** Through targeted education, public awareness, and gender responsive participatory approaches, the plan seeks to empower communities, youth institutions and households to adopt climate-sensitive sanitation and hygiene practices, manage water more sustainably, and respond effectively to climate risks.

The WASH NAP will contribute to the development of other sectors such as to the Food Security and Nutrition, as integrated water resource management and ecosystem protection are integral to the plan. The plan will further support Education and Health sectors, as resilient WASH infrastructure in schools is expected to contribute to the attendance and retention of children, especially girls, in the schools apart from gaining health benefits. Resilient WASH service in health facilities will enhance its effectiveness in health service delivery. Aspects of youth engagement and employment generation remain integral to the plan.

1.4 WASH-NAP Development Process

A national wide approach was undertaken to develop the WASH NAP for Uganda. This process was categorized into five phases and these included document review, stakeholder consultations, climate vulnerability of the WASH sector, prioritization of adaptation options and technical review and approval of the plan. Uganda's WASH NAP process was informed by the guiding principles as stipulated by the UNFCCC framework for the development of NAPs.

The first phase involved reviewing existing documents including climate adaptation strategies, NDCs, catchment management plans, and international and national policy frameworks with the aim to identify relevance and adaptation measures that needed strengthening.

The second stage encompassed conducting national, sub-national and local level stakeholder consultations which targeted to seek opinions and views related to enhancing the resilience of the WASH sector to the impacts of climate change. Subnational and local consultations were held in Mbale, Lira, Fort portal and Mbarara cities while the national workshop was conducted in Kampala city. The targeted stakeholders included government ministries, departments and agencies; private sector, Civil Society Organizations, Media; Academic and Research institutions; Cultural and Religious leaders; and Development partners. The purpose of conducting consultations was to ensure that the process was inclusive, transparent and effective. This is also meant to increase community support and refinement /prioritization of adaptation options. At the local level, the climate risk (drought, floods) vulnerable rural communities including marginalized groups (women, girls, elderly, refugees etc.) were mobilized into focus group discussion of 10-15 members in the adjacent districts to the cities where the meetings were conducted. These household discussions were held in the districts of Butaleja, Lira, Isingiro, Mbale, and Kabarole in consideration of rural and urban settings in identifying climate resilient WASH adaptation measures.

Climate risk assessment and vulnerability investigations of the WASH sector were compiled in the third phase. Hazard datasets (drought, floods, and landslides) of 2019 were obtained from Office of the Prime Minister (OPM) and spatially analyzed for exposure and vulnerability (Box-1). The other datasets (administrative boundaries, water sources, population, water supply lines and sanitation facilities) were also obtained from the mandated institutions (Ministry of Water and Environment and Uganda Bureau of Statistics) for sensitivity and adaptive capacity assessment.

The fourth stage involved ranking WASH adaptation actions by region (western, central, eastern and northern) for customized implementation. A Results Based Planning Framework was adopted to inform the planning and monitoring processes of the actions. In this phase, the prioritized adaptation options were costed in consideration of sector past financing experience, expert judgment and the Uganda's Compendium of Costed Service Delivery Standards for 2024. The targeted stakeholders included government ministries, departments and agencies; private sector; civil society organizations; media; academic and research institutions; cultural and religious leaders; and development partners.

The fifth phase was resolved by conducting a review of the plan by the appointed technical review committee. This workshop was held in Jinja city in February 2025. The final plan was approved by steering committees and launched in June 2025.

Methodology for Assessing Vulnerability of the WASH Sector

Vulnerability in the WASH sector was assessed using a quantitative, composite index approach, based on the formula:

Vulnerability = (Exposure × Sensitivity) – Adaptive Capacity

The assessment was carried out at district level using spatial data and relevant indicators:

- **Exposure** was measured by identifying WASH elements (e.g., water sources, infrastructure, population) located within areas of moderate to very high hazard intensity, based on data from the Office of the Prime Minister (OPM, 2019). Exposure scores were ranked, weighted, and normalized to create an exposure index.
- **Sensitivity** was assessed using indicators such as dependence on surface water sources, low functionality of point water systems, erosion and sedimentation rates, frequency of extreme weather events, and inadequate sanitation coverage. These were processed to generate a district-level sensitivity index.
- **Adaptive Capacity** was evaluated using indicators including the number of functional point water sources, uptake of rainwater harvesting, access to safe water, and equity in service access. These were similarly ranked, weighted, and normalized to produce an adaptive capacity index.

The combined analysis provided a vulnerability index that identifies districts where WASH services are most at risk from climate-related hazards.

1.5 Policy and Institutional Setting

1.5.1 Policy, Regulatory and Planning frameworks

This plan has been developed to reconcile multiple objectives, sectoral, catchment and local planning for climate resilient adaptation as committed at international, national and strategic planning. The frameworks aim to support the reduction of emissions, building resilience to climate change, support the building of climate resilient WASH infrastructure and services, and build the WASH knowledgebase. Table 1 presents the policy, regulatory and planning frameworks that guided the planning and implementation of climate resilient WASH adaptation options.

Table 1: Strategies, International and national policy and regulatory frameworks

Frameworks	Relevance to WASH-NAP
INTERNATIONAL FRAMEWORKS	
United Nations Framework Convention on Climate Change (UNFCCC) (1992)	Uganda signed and ratified the UNFCCC in 1992. The UNFCCC primarily focuses on adaptation measures related to water, as climate change is expected to significantly affect water availability and quality, impacting agriculture, ecosystems, and human health
The Paris Agreement (2016)	The Paris Agreement implicitly addresses water management as a crucial aspect of climate change mitigation and adaptation, recognizing that climate change will significantly impact water availability and quality, making sustainable water management a key component of addressing climate issues globally.
The Sendai framework for Disaster Risk Reduction 2015-2030	Focuses on reducing the risk of disasters related to water hazards like floods, droughts, and waterborne diseases by promoting proactive measures to manage water resources sustainably, including early warning systems, infrastructure development, and community preparedness strategies, with the goal of building resilient communities against water-related disasters
Sustainable Development Goals (SDGs) 2015 Goal 6 - Clean water and sanitation	The goal focuses on ensuring access to "clean water and sanitation for all," meaning it aims to guarantee the availability and sustainable management of water resources, including drinking water, sanitation, and hygiene (WASH) for everyone globally.
The Kyoto Protocol (2005)	The Kyoto Protocol does not directly address water resources specifically, as its primary focus is on reducing greenhouse gas emissions, but it does indirectly impact water resources by aiming to mitigate climate change which is predicted to significantly affect water availability due to altered weather patterns like increased droughts and floods
United Nations Convention on Biological Diversity (UNCBD) (1993)	Uganda signed the Convention on Biological Diversity (CBD) on 12th June 1992 and ratified it on 8th September 1993. The UNCBD focuses on Biodiversity is sustainably used and managed and nature's contributions to people, recognizing the critical interlinkages between biodiversity conservation and climate change adaptation. Healthy, well-managed ecosystems form the backbone of ecosystem-based adaptation (EbA) by providing services such as flood regulation, water retention, soil stabilization, and climate buffering. Conversely, effective adaptation measures help maintain ecosystem integrity, enabling species and habitats to better withstand climate-related stresses.
NATIONAL LEGAL AND POLICY FRAMEWORKS	
The Constitution for the Republic of Uganda (1995), as amended in 2005	The 1995 Constitution, Objective XIV, defines clean and safe water as a fundamental right for all; it also compels the government to take all practical measures to promote good water management at all levels of action. Since the 1990s Uganda WASH services have significantly improved:
The National Climate Change Policy (2015)	The policy is central to Health and WASH adaptation; the policy recognizes the need to conduct vulnerability assessments of the health sector to make climate change impacts. It has put in place contingency plans to develop climate-resilient health systems.

National Water Policy (NWP) (1999)	The National Water Policy promotes a sustainable and integrated approach to managing water resources for the benefit of all Ugandans. It emphasizes both the social and economic value of water, aiming for the optimal and equitable allocation of water resources for present and future. It advocates for a holistic approach to water management, considering various uses and users, prioritizes the sustainable use and protection of water resources to ensure their availability for future generations, aims to ensure that all Ugandans have access to clean and safe water, recognizes the economic importance of water, particularly for agriculture, industry, and other productive sectors, outlines principles for water resource management, including efficient water use, climate change adaptation, and defines the role of different stakeholders.

Frameworks	Relevance to WASH-NAP
The National Environment Management Policy (2014)	Seeks to address environmental issues in a holistic and integrated manner. It specifically stands for prioritizing watershed management to control, conserve and regulate the water balance in the catchment regions; empowering lower levels of governance to systematically respond to local water challenges and ensuring that water resources contribute to socio-economic development
National Health Policy (2017)	The policy aims to enhance the health system 's ability to prepare for, and cope with rising needs for treating climate-sensitive diseases, strengthen adaptive mechanisms and enhance early-warning systems and adequate preparedness for climate-related diseases. Presently, it has been able to: make provisions for a safe water chain and sanitation facilities to limit outbreaks of waterborne diseases and implement strong public awareness programmes to promote better hygiene
The Local Government Act (1997) & Public Health Act (2000)	This policy takes up on backward mapping arrangements which enables the local governments (districts, towns, sub-counties) to take part in the process of designing and implementing WASH reforms, and build consensus for change based on experience with small-scale policy modifications, and enhance flexibility and discretion at the ground level.
The National Water & Sewerage Corporation Act (1995)	The policy gave rise to establishment of the National Water and Sewerage Corporation (NWSC). The NWSC has been responsible for piped water provision in large urban centers and small urban centers.
The Water Act (2000)	Provides for the use, protection, and management of water resources and supply. Vests the Government with the power to investigate, control, protect, and manage water resources in Uganda, guides the management and development of water and allows for the creation of regulations to further specify procedures and rules for water management. It defines the powers and functions of water authorities as the responsible entities for provision of water supply services and gives the Minister of Water and Environment the authority to demarcate water supply areas and appoint water authorities to provide water supply services in these areas through a notice in the Gazette.
Public Finance Management Act (2015)	It carries out the systematic integration of climate change in planning and budgeting.
The National Environment Act (1995)	The Act provides the legal framework for the sustainable management of environmental resources, including water. It established the National Environment Management Authority as the coordinating, monitoring, and supervisory body for that purpose. (Government of Uganda, 1995b)
National Climate change Act (2021)	The Act emphasizes the necessity of integrating climate change adaptation measures into WASH infrastructure and services to safeguard communities against the adverse effects of Climate Change
NATIONAL PLANS	
Uganda Vision 2040	By 2040, Uganda seeks to achieve universal and equitable access to safe and affordable drinking water for all, access to adequate and equitable sanitation and hygiene for all, and to end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.
The Updated Nationally Determined Contribution (2022)	It presents policy objectives of adaptation and mitigation. Pillar number three is related to water and sanitation, to "Promote climate-resilient water supply systems, increase water supply capacity and use efficiency".

The Third National Communication (2022)	Outlines major sources and sinks of greenhouse gas emissions, climate vulnerabilities, and proposed adaptation and mitigation measures. Adaptation efforts prioritise the conservation and protection of water bodies through integrated water resources management, including contingency planning for floods and droughts. Mitigation actions focus on improving wastewater disposal, mainly in urban and peri-urban areas.
National Biodiversity Strategy Action Plan (2024)	It has the overarching goal to enhance biodiversity conservation, reduce biodiversity loss including the target to minimize the impact of climate change and marine acidification on biodiversity and increase its resilience through mitigation, adaptation, and disaster risk reduction actions, including through nature-based solutions and/or ecosystem-based approaches, while minimizing negative and fostering positive impacts of climate action on biodiversity.

Frameworks	Relevance to WASH-NAP
Catchment Management Plan	A Catchment Management Plan is a long-term strategy for the sustainable development and management of water and related resources within a specific geographical area, known as a catchment or watershed. It aims to ensure the coordinated development and management of land, water, and related resources, while also protecting vital ecosystems and promoting the well-being of communities.
Strategy for catchment based Integrated Water Resources Management in Uganda (2020-2030)	Guides implementation of Catchment based Integrated Water Resources Management (CbIWRM) in Uganda from 2020 to 2030. It envisions "sustainably managed water resources that support livelihoods and development by 2030". Its goal is to: ensure the availability and sustainable management of water and related resources for Uganda's socioeconomic transformation by 2030.
Catchment Management Planning Guidelines (2018)	Provide a common framework for catchment planning to guide WMZ teams and other stakeholders during preparation of Catchment Management Plans; provide the planning teams an overview of the catchment planning process and the outcomes they are seeking; help to create awareness and understanding of the catchment planning process and its value in supporting sustainable, equitable and more rapid economic growth and livelihoods.
Uganda Green Growth Development Strategy 2017/18 to 2030/31 (2017)	Aims to operationalize green growth principles and accelerate the implementation of global development goals, Uganda Vision 2040 and the National Development Plans. The UGGDS has five focus areas, including "natural capital management and development". One sub-sector within this area relates to wetlands and optimal water resources management
The Pro-Poor Strategy for the Water and Sanitation Sector (2006)	Aims to improve the effectiveness of WASH pro-poor services. The strategy establishes the need for operational water quality monitoring and appoints service providers to ensure that low-income households are consuming safe water.
The National Water Quality Management Strategy -2006	Aims to safeguard the quality of the country's water resources. This strategy highlights the importance of water quality management and frames approach for achieving water quality standards. In particular, it established the National Water Quality Laboratory at Entebbe is the national reference laboratory for water analysis.
The Water and Sanitation Sub-Sector Gender Strategy (2018)	Acknowledges that water and sanitation policies affect men and women differently and aims at developing a gender perspective in the sector. Specifically, the strategy provides guidelines to operationalize gender sensitive program planning, implementation, monitoring and evaluation. Additionally, it aims to increase the number of women in leadership position among WASH committees.
Health National Adaptation Plan (H-NAP) 2025-2030	The plan addresses the significant threat climate change poses to public health. It enhances the resilience of the health sector against climate- related impacts.

National Adaptation Plan for the Agricultural Sector (2018)	The plan emphasizes the modification of agricultural practices and infrastructure to better manage water availability in the face of changing climate conditions, primarily focusing on adapting to potential water scarcity, floods, and erratic rainfall patterns through measures like improved irrigation systems, water harvesting techniques, drought-resistant crop varieties, and efficient water usage practices to ensure food security
A pro-poor strategy in the water and sanitation sector (2006)	This strategy aims to disproportionately benefit the poor, particularly those living below the poverty line or without access to safe water and sanitation. This strategy focuses on improving access to these services for the most vulnerable populations, ensuring equitable distribution and addressing the needs of those who are most marginalized

1.5.2 Institutional Arrangements

The Water and Environment Sector consist of two sub-sectors: the Water and Sanitation (WSS) sub-sector, and the Environment and Natural Resources (ENR) sub-sector. The Water and Sanitation sub-sector comprises of Water Resources Management, Rural Water Supply and Sanitation, Urban Water Supply and Sanitation, and Water for Production. The Environment and the Natural Resources sub-sector comprise environmental management; management of forests and trees; management of wetlands; and meteorology; weather and climate change. The Ministry also works closely with other Government Ministries, Local Governments, the Private Sector and Civil Society Organizations (CSOs) and other stakeholders at Community, District, Regional and National levels. The Climate Change Department coordinates the national programmes and commitments related to adaptation.

At the national level, implementation of water, sanitation, hygiene and climate change related activities is handled through different technical departments responsible for water resources management, rural water supply and sanitation, urban water supply and sanitation, and water for production. To bring services closer to the people and address climate change and other related challenges in a timely manner, MWE has also established deconcentrated structures that include:

a) **Water Management Zones** established by hydrological sub-basins to ensure de-concentration of water resources management functions. This enables creation of stakeholder participation forums and is also an interactive interface for the center and the local government level sector actors. The structures coordinate and facilitate implementation of integrated water resources management at the lowest appropriate levels and interventions on the ground through delegation based on catchment/basin-wide approaches.

b) **Water and Sanitation Development Facilities** are implementation mechanisms for the development of piped water supply and sanitation infrastructure for small towns and rural growth centers.

c) **Umbrella Organizations** support the operation and maintenance of small-piped water schemes by a range of services including technical, managerial and financial support, capacity building and water quality monitoring, to promote effective service delivery, sustainable asset management and financial viability.

d) **Water for Production Regional Centers** are responsible for de-concentrated water for production functions at regional level. They also provide proximity technical backstopping and capacity building to local governments and other stakeholders involved in water service provision.

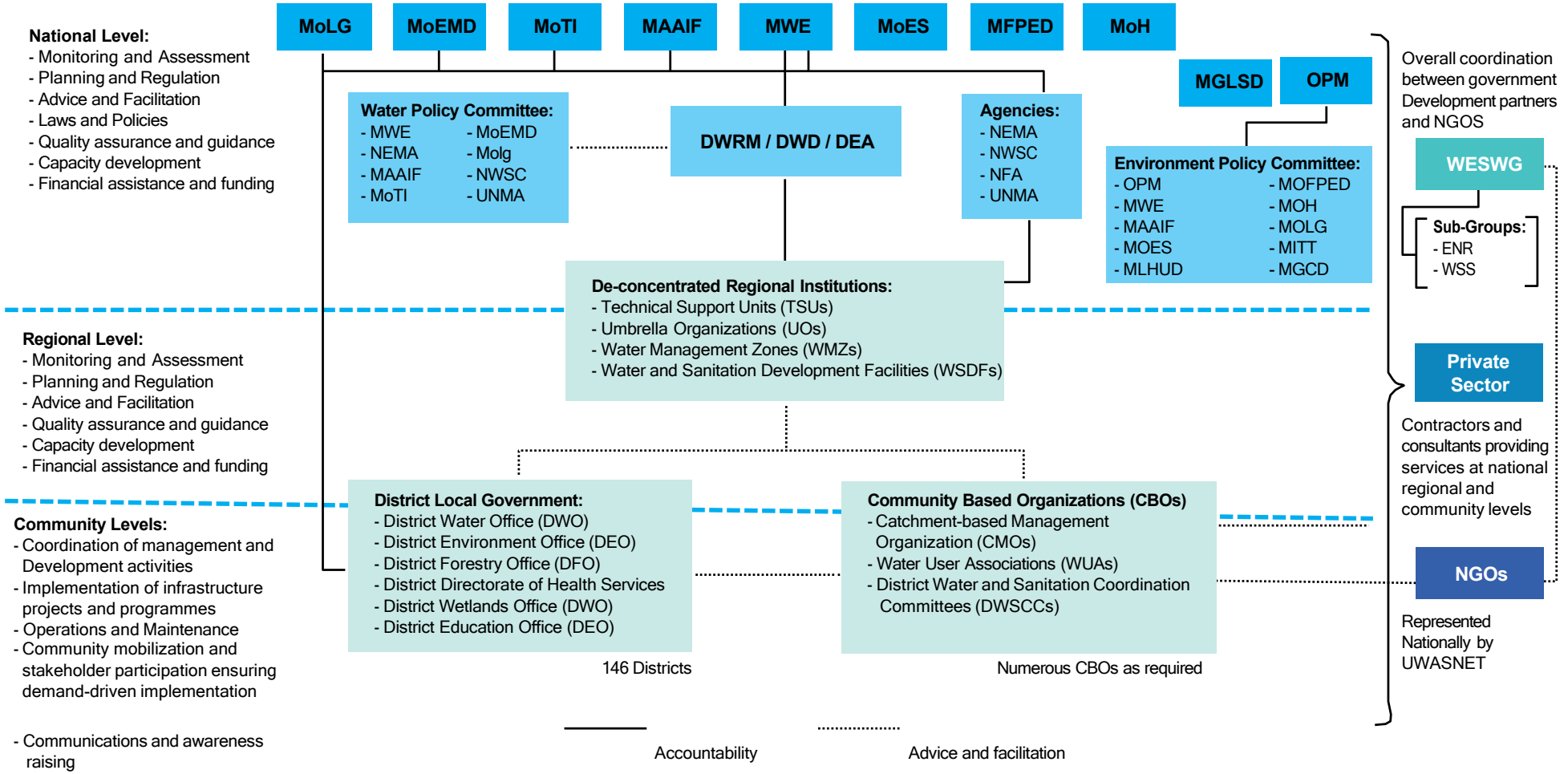
e) **Rural Water and Sanitation of Regional Centre** provide backup technical support to District Local Governments in terms of planning, budgeting, procurement, contract management, and operation and maintenance of water and sanitation facilities. They also spearhead monitoring of the utilization of the water and sanitation conditional grant in line with set sector guidelines. They shall remain key in addressing capacity gaps at district and lower local government levels.

f) **Regional Natural Resources De-concentrated structures:** These Regional structures act as a link between the Centre and Local Governments aimed at bringing environment services near to communities. The Natural Resources Coordination Units provide technical backstopping and support supervision to Local Governments and other stakeholders in the region of jurisdiction. These are based in the North, East, West and Central Regions of the Country. They include Regional Wetlands Coordination Units, Regional Environment Coordination Units and Regional Forestry Services Coordination Units.

Other institutions affiliated to the Ministry responsible for sector capacity building include Water Resources Institute, Appropriate Technology Center, National Meteorological Training School, and Nyabyeya Forestry College.

The institutional arrangements framework is shown in Figure 1.

Figure 1: *Ministry of Water and Environment Institutional Framework*



1.6 Governance Gaps in the WASH Sector

Despite progress in policy development and institutional strengthening, Uganda's WASH sector continues to face multiple governance-related challenges that undermine its capacity to respond effectively to climate risks. These challenges span from policy, regulation, institutional coordination, financing, human resources, to social inclusion, as summarized below.

Institutional Fragmentation and Coordination Gaps. The WASH sector is characterized by multiple actors operating with overlapping or inadequately defined mandates. This fragmentation limits coherence in planning, budgeting, and implementation - particularly for sanitation and hygiene, which often receive less institutional attention. Decentralization has further complicated coordination, with local governments facing difficulties aligning priorities and allocating adequate resources for climate-resilient WASH services. Institutional mechanisms for inter-sectoral collaboration, especially at district and catchment levels, remain weak or underutilized.

Regulatory and Enforcement Challenges. While Uganda has established legal frameworks for water resource protection, enforcement remains inconsistent, particularly in wetlands and fragile catchment areas. Context-specific barriers such as, limited capacity of enforcement bodies, weak compliance mechanisms, and lack of community awareness hamper effective regulation. Climate resilience is still insufficiently reflected in existing WASH guidelines and technical standards, and top-down technological prescriptions often fail to account for local feasibility and affordability.

Financial and Resource Mobilization Gaps. The sector is highly dependent on development partners for both financial and managerial support. Public investment in climate-resilient WASH infrastructure remains inadequate, especially in rural areas, which continue to lag urban centers. Climate adaptation financing is not clearly earmarked within national or district budgets, and innovative financing tools such as climate bonds or performance-based incentives are underexplored. Moreover, there is limited capacity to prepare and submit bankable proposals to access external climate finance.

Capacity and Data Limitations. Across national and local institutions, there are widespread gaps in technical expertise, staffing, and data management. Inadequate access to reliable climate and WASH-related data hinders planning and decision-making. Monitoring and evaluation systems are often fragmented, limiting the ability to track climate impacts or measure the effectiveness of adaptation efforts this has been exacerbated by the limited historical evidence available on the impact of climate change on WASH services and infrastructure. There is also limited training and professional development on climate-resilient WASH approaches, nature-based solutions, or inclusive planning.

Equity and Inclusion Deficits. Gender mainstreaming remains weak, often limited to the role of gender focal persons without broader structural support. Budgets rarely prioritize gender-responsive or inclusive programming. Vulnerable populations such as those living in informal settlements, people with disabilities, refugee settlements, fishing village and island communities, frequently face systemic barriers to accessing resilient WASH services. Participation of these groups in decision-making, planning, and monitoring processes is also limited.

These governance challenges, unless addressed, will continue to impede progress toward a climate resilient and inclusive WASH sector.

CHAPTER
02

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STATUS OF WASH SERVICES IN UGANDA

2.1 Background

Uganda is endowed with abundant water resources, including extensive wetlands, the White Nile River, and large lakes such as Lake Victoria. However, the availability and accessibility of these resources are increasingly under pressure. Approximately 35 per cent of Uganda's water originates from neighboring countries, creating potential vulnerabilities in the event of upstream pollution or over-abstraction (USAID and SWP, 2021). Rapid urbanization and agricultural expansion have also contributed to the degradation of wetlands, with over alarming 40 per cent lost since 1994. With a large and growing population, per capita water availability stands at 1,402 cubic meters per year - below the Falkenmark threshold for water stress[1] (USAID and SWP, 2021). Climate change is expected to intensify these pressures. Increased aridity and drought stress are likely to exacerbate water scarcity in some areas, increasing competition over limited resources and threatening biodiversity. At the same time, more intense rainfall events may lead to erosion, flooding, and water logging of farmland, reducing crop yields and worsening food insecurity.

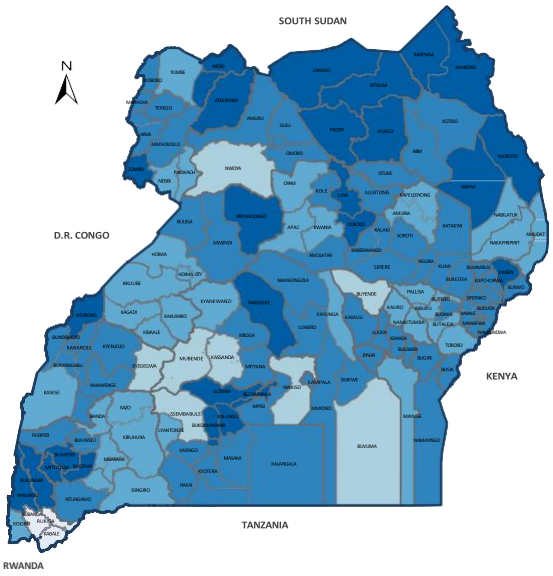
While domestic water supply is a national priority, Uganda's water sources are increasingly affected by pollution from untreated municipal and industrial waste. Domestic and municipal use, agriculture, and industry account for 51, 41, and 8 per cent of total freshwater abstractions respectively, with surface water meeting most of the demand (USAID and SWP, 2021). Lake Victoria, for instance, is a key municipal water source for Kampala and other urban centers, but it is under growing threat from pollution, eutrophication, and declining oxygen levels caused by untreated sewage and agricultural runoff. Shallow wells and springs - important for many rural households are often contaminated by poor sanitation and industrial discharges. Groundwater quality is at risk in mining regions, where the leaching of heavy metals affects aquifer integrity. In dry regions such as Karamoja, perennial surface water is scarce, and existing valley dams cannot meet livestock watering needs.

1 The Falkenmark Water Stress Index measures water scarcity as the amount of renewable freshwater that is available for each person each year. A country is said to be experiencing water stress when water availability is below 1,700 m3 per person per year; below 1,000 m3 is considered water scarcity; and below 500 m3 is absolute or severe water scarcity.

2.2 Access to safe Drinking Water

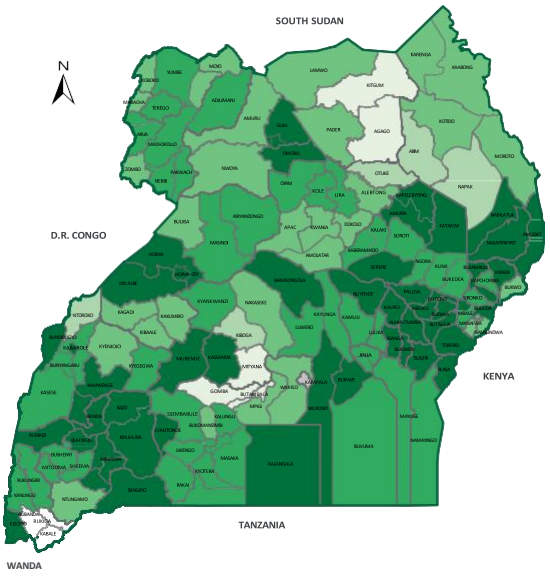
As per the WHO-UNICEF Joint Monitoring Programme 2024, access to at least basic water supply in Uganda stands at 63 per cent, with higher coverage in urban areas at 79.9 per cent than in rural areas at 56.6 per cent. Point water sources show relatively high functionality, with 84 per cent functional in rural areas and 85 per cent in urban areas. However, the expansion of safely managed and climate-resilient water services has been limited. About 17 per cent of the population access safely managed drinking water, while 39 per cent rely on basic services (WHO and UNICEF, 2022). Disparities are particularly severe in rural areas, where around 20 per cent of the population continues to rely on unimproved or surface water sources. Regional and wealth-based inequalities are also stark (UBOS, 2020): a 36-percentage point gap exists in access to basic services between the richest (80 per cent) and poorest (44 per cent) households, and a 59-point gap separates Kampala (97 per cent) and the Karamoja region (38 per cent). Rapid population growth and urbanization further strain infrastructure, particularly in peri-urban and informal settlements, where poor households may spend up to 22 per cent of their income purchasing water from private vendors (Water.org, n.d.).

Figure 2: *Access to safe drinking water in Uganda*



Source: Water Supply Atlas, 2025

Figure 3: *Functionality of point water sources in Uganda*

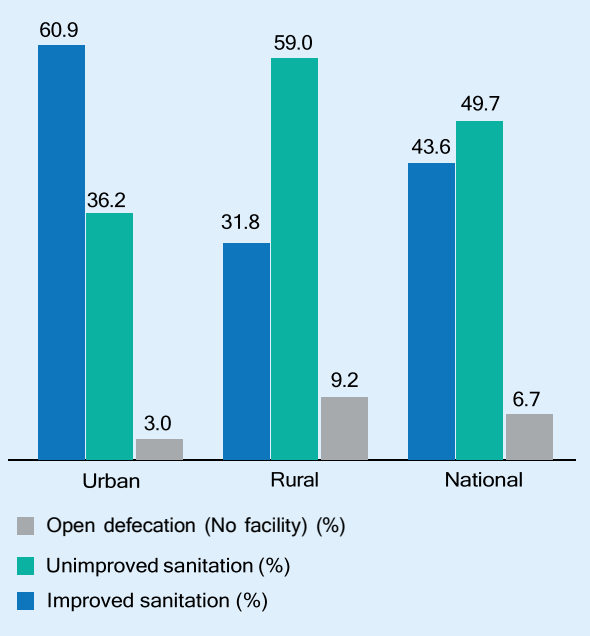


Source: Water Supply Atlas, 2025

2.3 Household Sanitation and Hygiene

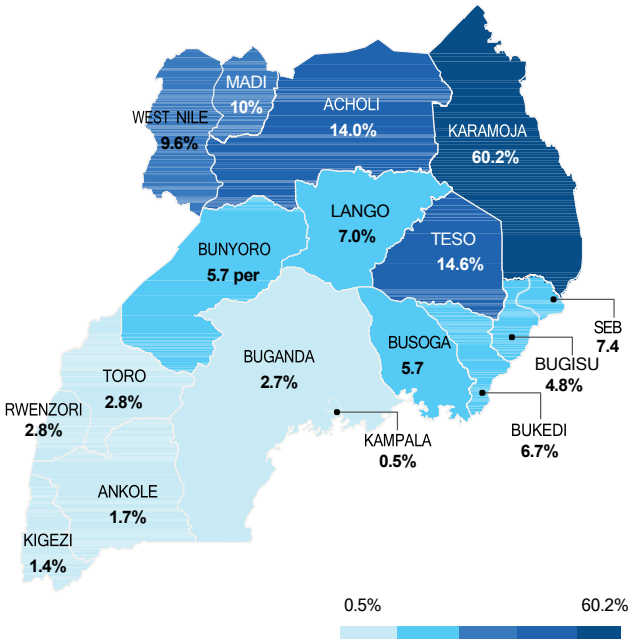
Sanitation and hygiene services lag significantly behind national goals. Access to improved sanitation stands at 43.6 per cent overall, but with wide disparities: 60.9 per cent in urban areas versus just 31.8 per cent in rural areas (UBOS, 2024). Improved facilities include flush toilets, ventilated improved pit latrines, covered pit latrines with slabs, and Ecosan systems. An estimated 6.7 per cent of households still practice open defecation, with extreme concentrations in Karamoja, where the rate reaches 60.2 per cent. Over 28 million people lack access to improved sanitation, and only 20 per cent of the population access at least a basic service. Hygiene conditions also remain poor (WHO and UNICEF, 2022). In 2024, 47.1 per cent of households reported having a handwashing facility next to a toilet. However, only 24.3 per cent had both water and soap, 10.3 per cent had water only, and 12.5 per cent lacked both (UBOS, 2024). Over three-quarters of the population still lack access to basic hygiene services (WHO and UNICEF, 2022).

Figure 4: *Percentage distribution of households by type of sanitary facilities*



Source: UBOS, 2024

Figure 5: *Percentage of households without a sanitary facility by sub-region*



Source: UBOS, 2024

2.4 WASH in public places (facilities and institutions)

WASH conditions in public schools are similarly inadequate, with national coverage of 54.77 per cent drinking water, 74.75 per cent basic sanitation, and 38.55 per cent basic hygiene services. Similar deprivations are observed in WASH in Health care facilities, with 58.69 per cent basic water supply access, 8.8 per cent basic sanitation and 24.56 per cent basic hygiene services (UNICEF and WHO,2023). JMP data reveals a significant urban-rural divide with just 12 per cent of rural schools provide basic hygiene services, compared with 44.64 per cent of urban schools (UNICEF and WHO, 2020). These gaps have implications not only for child health and education outcomes but also for epidemic preparedness and overall system resilience in the face of climate-related shocks.

2.5 Water Resources Management

The goal of the Ministry of Water and Environment is sustainable development and management of water and environment resources for climate resilience and socio-economic transformation. Water resources management contributes to this goal through strengthening integrated and sustainable management of water resources. Performance of water resources management is measured in terms of compliance to water use permits and water quality standards. The number of water use permits increased from 1,514 in FY2019/20 to 2,560 in FY2023/24 reflecting 69 per cent (1046) increment. Groundwater abstraction permits increased by 591 from 844, surface water abstraction by 382 from 414 and wastewater discharge permits by 73 from
256. The regulated water use relating to the new water use permits is 102Million cubic meters per day. Compliance with groundwater abstraction has increased from 76 per cent in FY 2019/20 to 78 per cent in FY 2023/24, against the NDP III target of 81 per cent for FY 2024/25. Similarly, compliance with surface water abstraction improved slightly from 78 per cent in FY 2019/20 to 79 per cent in FY 2023/24, with the NDP III target of 82 per cent for FY 2024/25. The percentage change of water samples complying with national standards for water collection points in rural areas increased from 41 per cent in FY 2019/2020 to 69 per cent in FY 2023/24, while in urban areas it increased from 60 per cent FY 2019/2020 to 85.4 per cent in FY 2023/24. This is the achievement reported against the NDP III targets for FY 2024/25 i.e., 80 per cent for rural and 90 per cent for urban areas respectively. There is an understanding at the sector level, achieving NDP III targets requires greater investment, stronger regulatory measures, stricter penalties for non-compliance with water laws and regulations and strengthening integrated and sustainable management of water resources.

In addition to the regulatory framework, the framework for catchment-based water resources management was established in 2010 and has been guiding the preparation of Catchment Management Plans (CMPs). As part of implementation of the framework for catchment-based water resources management, Catchment Management Plans for 22 catchments out of the 32 catchments in the country have been prepared and these are guiding planning for mitigation and adaptation to impacts of climate change. The CMPs provide framework for implementing water resources related interventions in a catchment and an opportunity for stakeholders to have coordinated planning and implementation of water and related interventions in a catchment. Various stakeholders can pick relevant interventions in the CMP that are in line with their objectives and mandates and develop them into implementable action plans. 22 Catchment Management Organizations have also been established to promote participation of stakeholders in the planning, development and management of water and related resources in the catchment. The Catchment Management Plans and Catchment Management Organizations have been provided for in the revised National Water Policy (2025).

Noting that impacts of climate change are best seen in the water environment in form of floods, droughts, pollution and landslides, several interventions have been undertaken to address biodiversity loss and its impacts of climate change. Some of the strategic interventions include:

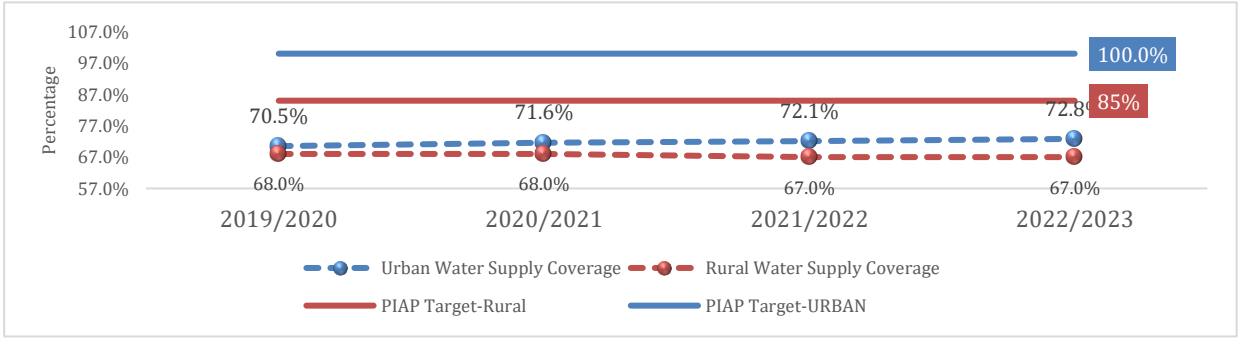
- Strategies related to biodiversity conservation and climate change adaptation such as defining nationally determined contributions (NDCs), national biodiversity strategy action plan (NBSAP), and developing sector specific national adaptation plans (NAPs)
- Policies promoting protection of lake shores and riverbanks such as National Management Act 2019
- Strategies on flood management supplemented with water harvesting
- Strategies on catchment management including watershed development and water source protection
- Establishment of early warning systems

Specific projects for enhancing the resilience of the communities, infrastructure and ecosystems to impacts of climate change related to water resources have therefore been developed for various catchments in the country and have received funding from various donors including the World Bank, Adaptation Fund, bilateral donors, etc. However, more work needs to be done to address impacts of climate change related to water resources on the communities, infrastructure and ecosystems in each of the thirty-two catchments in the country.

2.6 Trend in the progress of rural and water supply coverage

The WASH sector has experienced stagnation in coverage of safe water for human consumption (WASH services), with rural areas at 67 per cent and urban areas at 72.8 per cent.

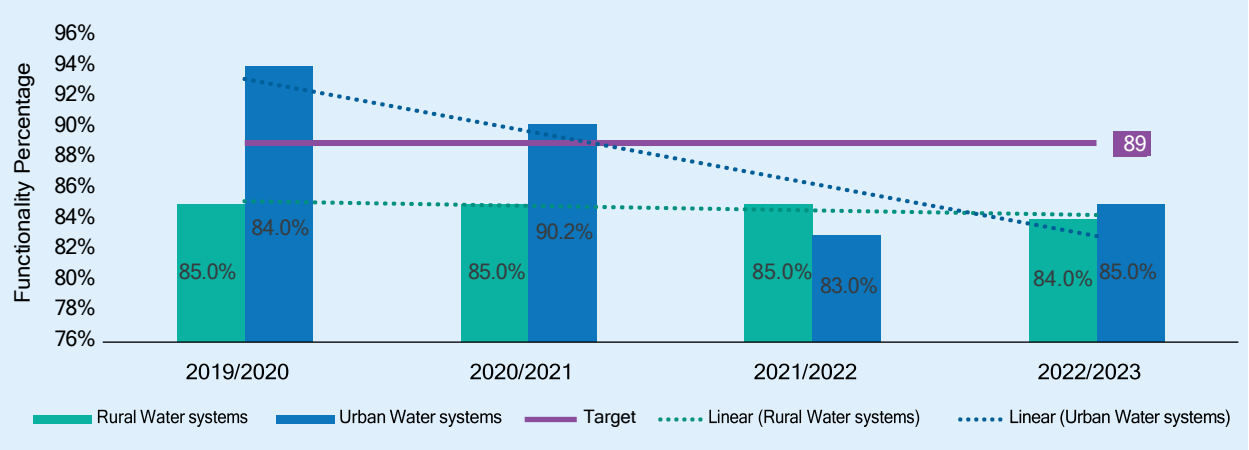
Figure 6: *Trend in progress of Rural and Urban Water supply coverage, 2019/2020-2022/2023*



Source: Natural Resources, Environment, Climate Change, Land and Water Management Programme Performance Report 2023

Despite the minor improvements in safe water coverage for human consumption in urban areas, the functionality rate of the water systems has been on a declining trend.

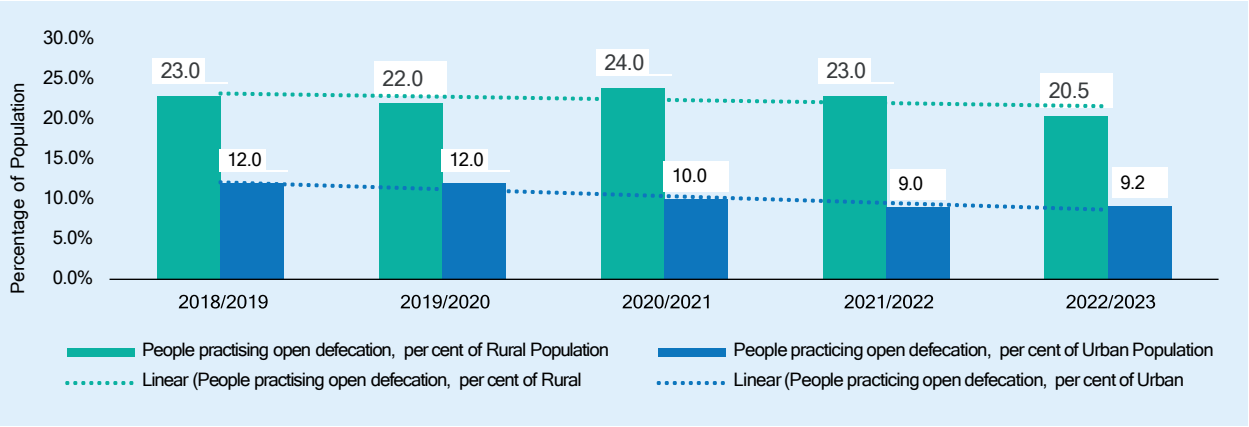
Figure 7: *Functionality rates of the Water Systems, FY 2019/2020-FY2022/2023.*



Source: Natural Resources, Environment, Climate Change, Land and Water Management, Programme Performance Report 2023.

Open Defecation has generally been declining in both rural and urban populations over the years.

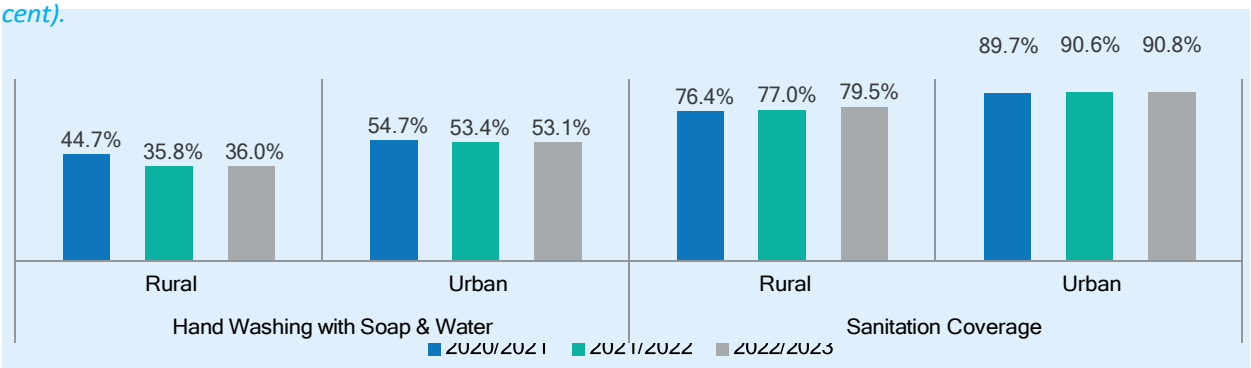
Figure 8: *Open Defecation Trends, 2018/2019-2022/2023 (as per cent of population practicing)*



Source: Natural Resources, Environment, Climate Change, Land and Water Management, Programme Performance Report 2023.

Sanitation coverage in both urban and rural areas

Figure 9: *Trends of Sanitation Coverage and Hand Washing Coverage for FY 2020/21 and 2022/23 (per cent).*

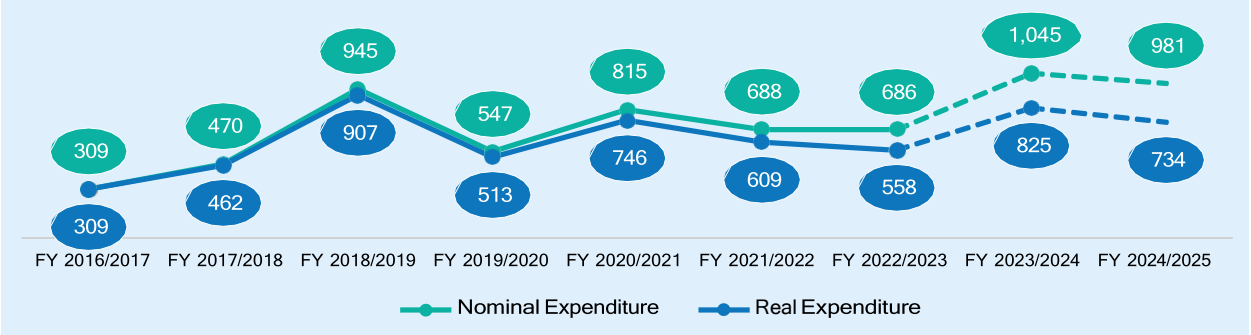


Source: Natural Resources, Environment, Climate Change, Land and Water Management, Programme Performance Report 2022.

2.7 Trend in WASH Spending

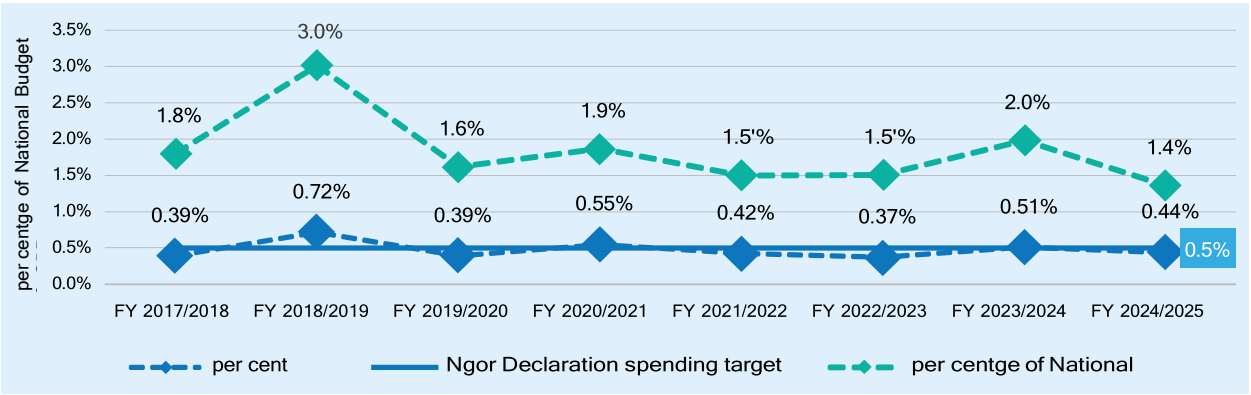
Nominal and Real WASH Sector Spending Trends Evolution: WASH sector spending has fluctuated significantly in recent years, peaking at UGX 945 billion between 2016/17 and 2018/19 due to increased external funding for key projects. However, it dropped to UGX 547 billion in 2019/20 and has been fluctuating, reaching UGX 686 billion in 2022/23.

Figure 10: *Nominal and real WASH spending trends, FY2016/17- FY2024/25 (in Ugx billions - base year is 2016/2017)*



Source: Ministry of Finance, Planning and Economic Development: Annual Budget Performance Reports & Approved Budget Documents

Figure 11: *Percentage of national Budget and GDP*



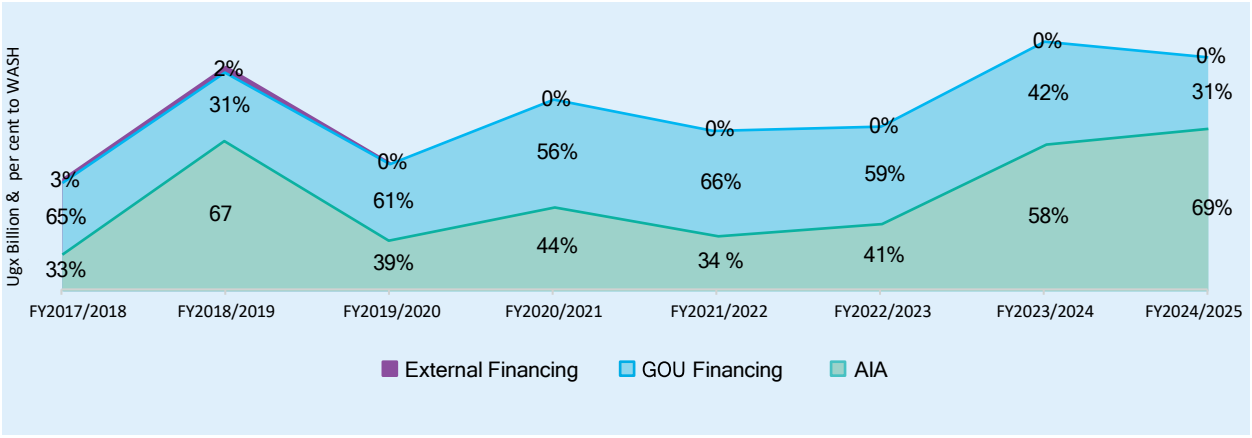
Source: Ministry of Finance, Planning and Economic Development: Annual Budget Performance Reports & Approved Budget Documents[2]

2.8 Financing the WASH Sector

On-budget external financing is a significant component of WASH spending in Uganda. In 2024/2025 financial year, external financing constituted 69% of the total budget for WASH, up from 58% in 2023/2024 (see figure 17). This increase is attributed to the reinvestment of funds in the water for production Phase II project, amounting to Ugx4billion, and a substantial rise in funding for the Integrated Water Resources Management and Development project (IWMDP) for Rural Water Supply, which will see an increase of Ugx174.5billion in 2024/2025 compared to 2023/2024 among other projects[3].

On the other hand, the Government spending on WASH was lowest in 2018/19, constituting only 31 per cent of total WASH spending. Projections for FY2024/2025 indicate a decline back to 31 per cent, down from 42 per cent in 2023/2024 (see Figure 17). This significant decrease is primarily attributed to reductions in projects such as support to rural water supply and sanitation by UGX 36.4 billion, the 100 per cent service coverage acceleration Project (SCAP 100) by UGX 27.1 billion, and the Kampala Water-Lake Victoria Water Sanitation Project by UGX 21.4 billion[4], among others.

Figure 16: *Main sources of financing for the WASH sector, FY2017/18-FY2024/2025 (in Ugx billions and as per cent of WASH Budget)*



Source: Ministry of Finance, Planning and Economic Development

2 Approved Estimates of revenue and expenditure (Recurrent and Development) Budget Report, FY 2024/2025, https://budget.finance.go.ug/sites/default/files/National%20Budget%20docs/Approved%20Budget%20Estimates%20for%20Central%20Governments%2C%20Vol.%201%20FY%202024-25.pdf , Page 736

3 Approved Estimates of revenue and expenditure (Recurrent and Development) Budget Report, FY 2024/2025, https://budget.finance.go.ug/sites/default/files/National%20Budget%20docs/Approved%20Budget%20Estimates%20for%20Central%20Governments%2C%20Vol.%201%20FY%202024-25.pdf , Page 737

CHAPTER
03

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CLIMATE CHANGE AND VULNERABILITY OF THE WASH SECTOR

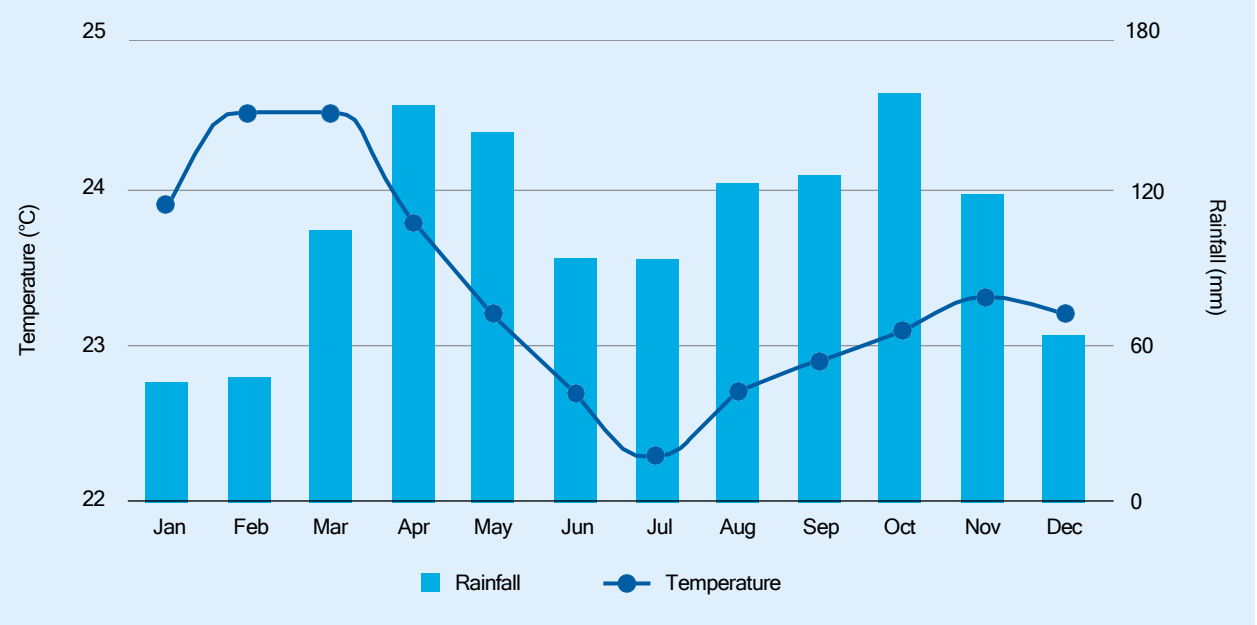
3.1 Uganda's Climate Profile

Uganda's climate is predominantly tropical, characterized by two main rainy seasons: the short rains from October to December, and the long rains from March to May. The northern region, which comprises approximately a quarter of the country, lies outside the equatorial belt and experiences a single rainy season from March to October. Uganda's climate variability is primarily influenced by several regional and global atmospheric systems, including the Inter-Tropical Convergence Zone (ITCZ), the Indian Monsoon, Congo Air Masses, the Indian Ocean Dipole (IOD), and the El Niño Southern Oscillation (ENSO).

Between 1991 and 2020, Uganda's average annual precipitation was approximately 1,197 mm. Monthly rainfall ranged from a low of 39.6mm in January to a peak of 152.7mm in April (World Bank, 2021). Rainfall varied significantly across the country, with the Karamoja region in the northeast receiving the lowest annual totals around 400 mm, while areas near Lake Victoria and Mount Elgon received up to 2,200 mm.

Temperatures in Uganda are generally moderate throughout the year, with a historical mean annual temperature of 22.8°C. Monthly averages range from a minimum of 15°C in July to a maximum of 30°C in February (MWE, 2015). However, temperature variations across the country remain significant due to Uganda's diverse topography. In the high-altitude regions of the Rwenzori Mountains and Mount Elgon, temperatures can drop to 0°C, while in the northeastern districts such as Gulu and Kitgum, they often exceed 30°C. Notably, the permanent ice caps on the Rwenzori Mountains shrunk by 49 per cent between 1987 and 2003 due to rising temperatures and are projected to disappear entirely by the 2040s. This trend poses serious risks to local water availability, ecosystems, and livelihoods.

Figure 17: *Average monthly temperature and rainfall for Uganda for 1991–2020*



Source: WBG Climate Change Knowledge Portal (2021)

3.1.1 Observed and Projected Temperature Trends in Uganda

Between 1950 and 2023, Uganda experienced a steady warming trend, with average temperatures increasing at a rate of 0.44°C per decade (UNMA, 2023). Minimum temperatures have risen by 0.5 to 1.2°C, and maximum temperatures by 0.6 to 0.9°C over this period. This warming has contributed to a significant increase in the frequency of hot days and nights, while the number of cold days has markedly declined since 1960 (World Bank, 2021).

The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report confirms that human induced climate change is already intensifying weather and climate extremes globally, and that Africa - particularly its tropical regions - is expected to experience severe impacts than other parts of the world (IPCC, 2021). In Uganda, projected mean annual temperature for the mid-century period (2031-2060), relative to the 1981-2010 baseline increases, ranging from 1.0 to 1.5°C under low (RCP 2.6) and moderate (RCP 4.5) emissions scenarios. Under the high-emissions scenario (RCP 8.5), the increase is projected to reach 1.5 to 3.0°C across much of the country (Figure 7).

Figure 18a: *Historical and projected mean temperature for Uganda from 1986 to 2099.*

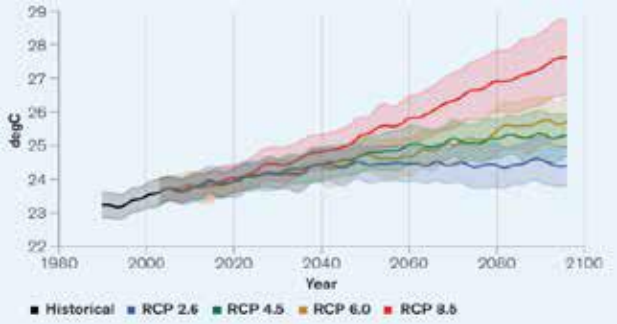
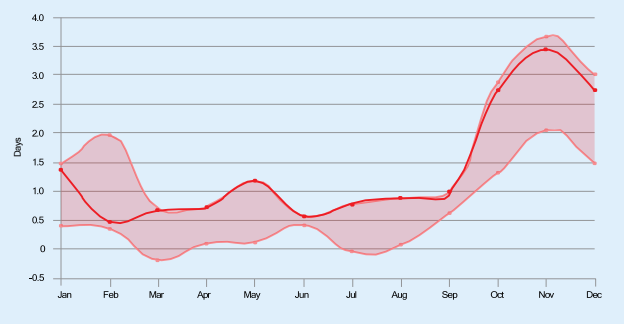


Figure 18b: *Projected change in Summer Days (Tmax> 25°C)*

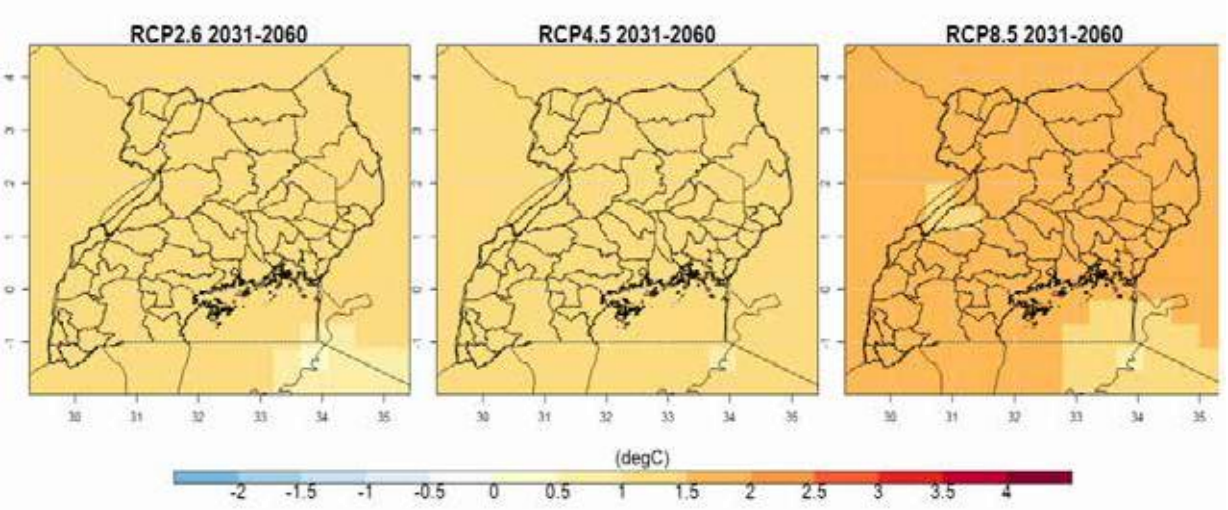


Source: World Bank, 2021

The most pronounced warming is expected during Uganda's coolest season (June to September), with temperatures potentially rising by 1.5 to 5.4°C by the end of the century. These changes are likely to lead to increased aridity, longer and more intense dry spells - particularly from December to March - and increased evapotranspiration, further straining water resources.

The Northern and Southwestern regions are projected to experience the most significant warming, with increases of 2.5 to 3.0°C expected by the 2050s (Figure 8). By the end of the century, projections suggest a warming of between 1.4°C and 4.2°C across the country, with the greatest increase concentrated in northern and southwestern districts (CSCG, 2015).

Figure 19. *Projected mean annual temperature changes for the 2031-2060 climate period in relation to the 1981-2010 average*



Source: MWE, 2022a

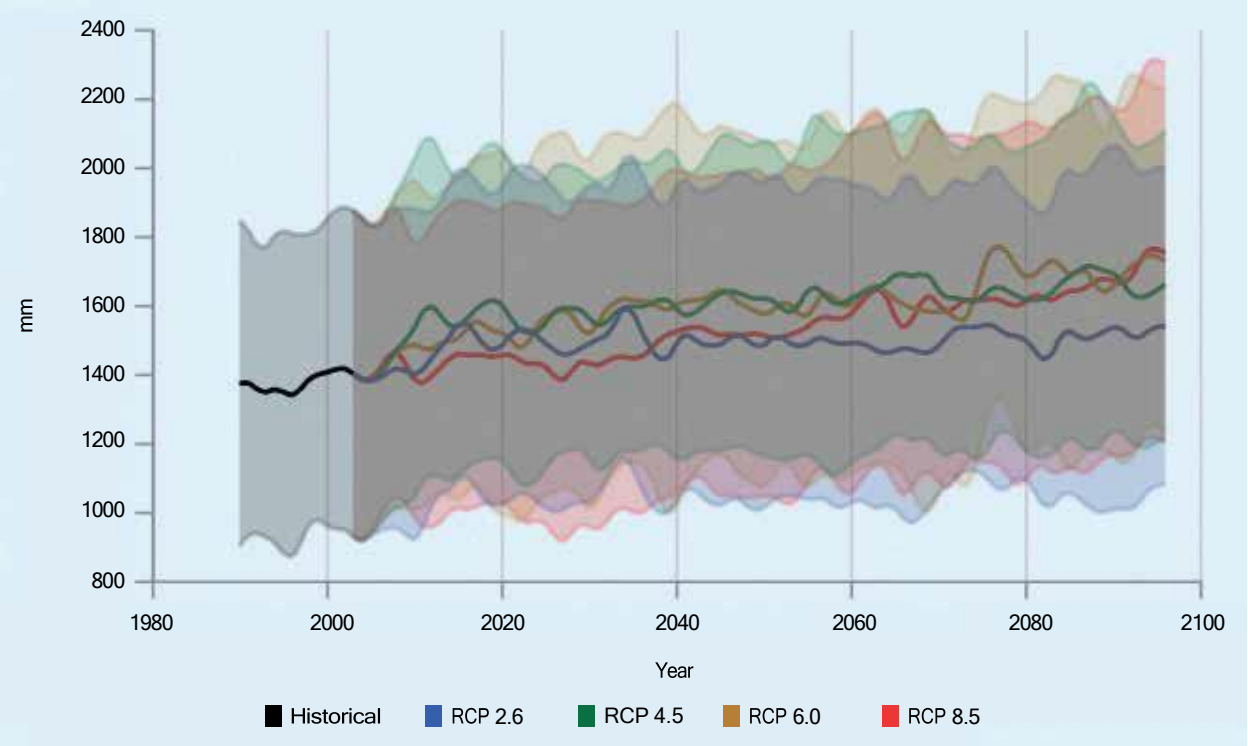
3.1.2 Observed and projected rainfall trends in Uganda

Uganda has experienced a statistically significant decline in both annual and seasonal rainfall over recent decades, presenting serious challenges for agriculture, water availability, water demand, water quality, reduced water levels, competition for water levels, hydropower generation, and lake level stability. This trend has been most pronounced during the March-May rainy season and in northern districts such as Gulu, Kitgum, and Kotido, where rainfall has decreased by an average of 6.0mm per month per decade (World Bank, 2021).

Looking ahead, rainfall patterns are expected to shift under future climate scenarios, although projections

carry some degree of uncertainty (Figure 9). Overall, mean annual rainfall is projected to increase, particularly during the December-February (DJF) period - traditionally a dry season across most of the country. While this may alleviate dry-season water stress in some areas, it could also exacerbate flood risks and lead to seasonal disruptions (MWE, 2015).

Figure 20: *Historical and projected annual average rainfall for Uganda from 1986 to 2099*

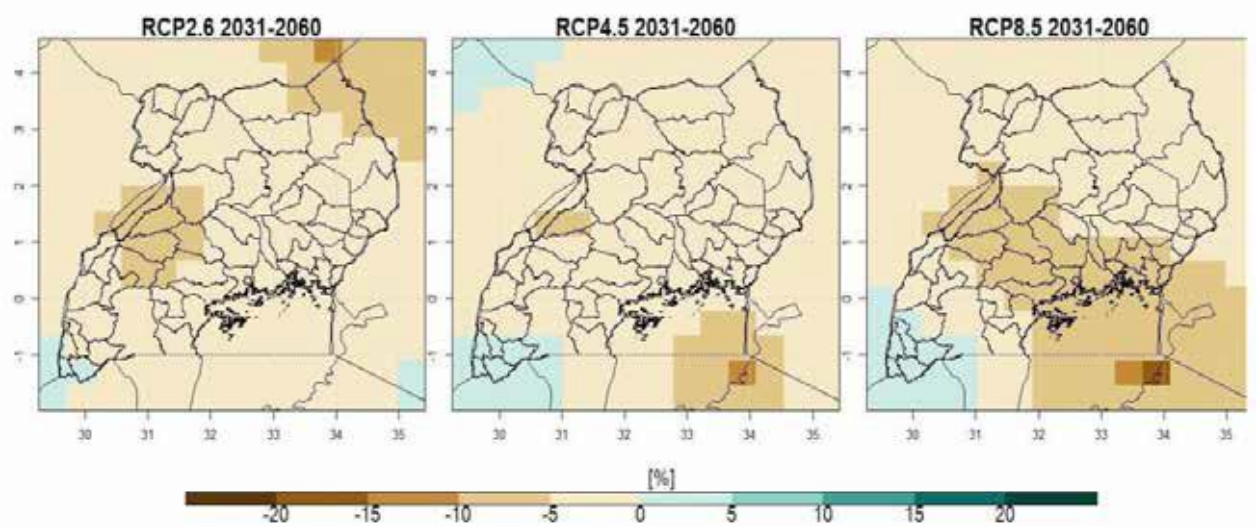


Source: World Bank, 2021

Under the low-emission scenario (RCP 2.6), most regions are projected to experience minimal changes in annual rainfall by mid-century compared to the 1981-2010 baseline. However, some localized declines of 5 to 10 per cent are anticipated in mid-western Uganda (Masindi and Hoima) and the north-eastern Karamoja region (Figure 10). Under the moderate-emission scenario (RCP 4.5), similar patterns are observed, with the southwestern highlands expected to receive a 5 to 10 per cent increase in annual rainfall. In contrast, the high-emission scenario (RCP 8.5) suggests a more complex and regionally varied outlook. By mid-century, average annual rainfall is projected to decrease by 5 to 15 per cent in parts of central, northern, and north- eastern Uganda, while increasing by 5 to 10 per cent in the southwestern highlands, the western shores of Lake Victoria, and the Mount Elgon region. Additional gains are projected in the corridor stretching from the Rwenzori Mountains to the southern part of Lake Kyoga.

In addition to changes in annual totals, Uganda is expected to experience more frequent and intense rainfall events under high-emission scenarios, particularly in the near- to mid-term. These shifts in rainfall intensity and variability are likely to affect major agricultural zones, livestock grazing areas, and transportation infrastructure - especially in regions already prone to flooding.

Figure 21: *Projected mean total annual rainfall for the 2031-2060 climate period in relation to the 1981-2010 average*



Source: MWE, 2022a

Summary of Projected Climate Patterns

In general, the climate throughout Uganda will be warmer in the future, with annual rainfall showing unclear pattern:

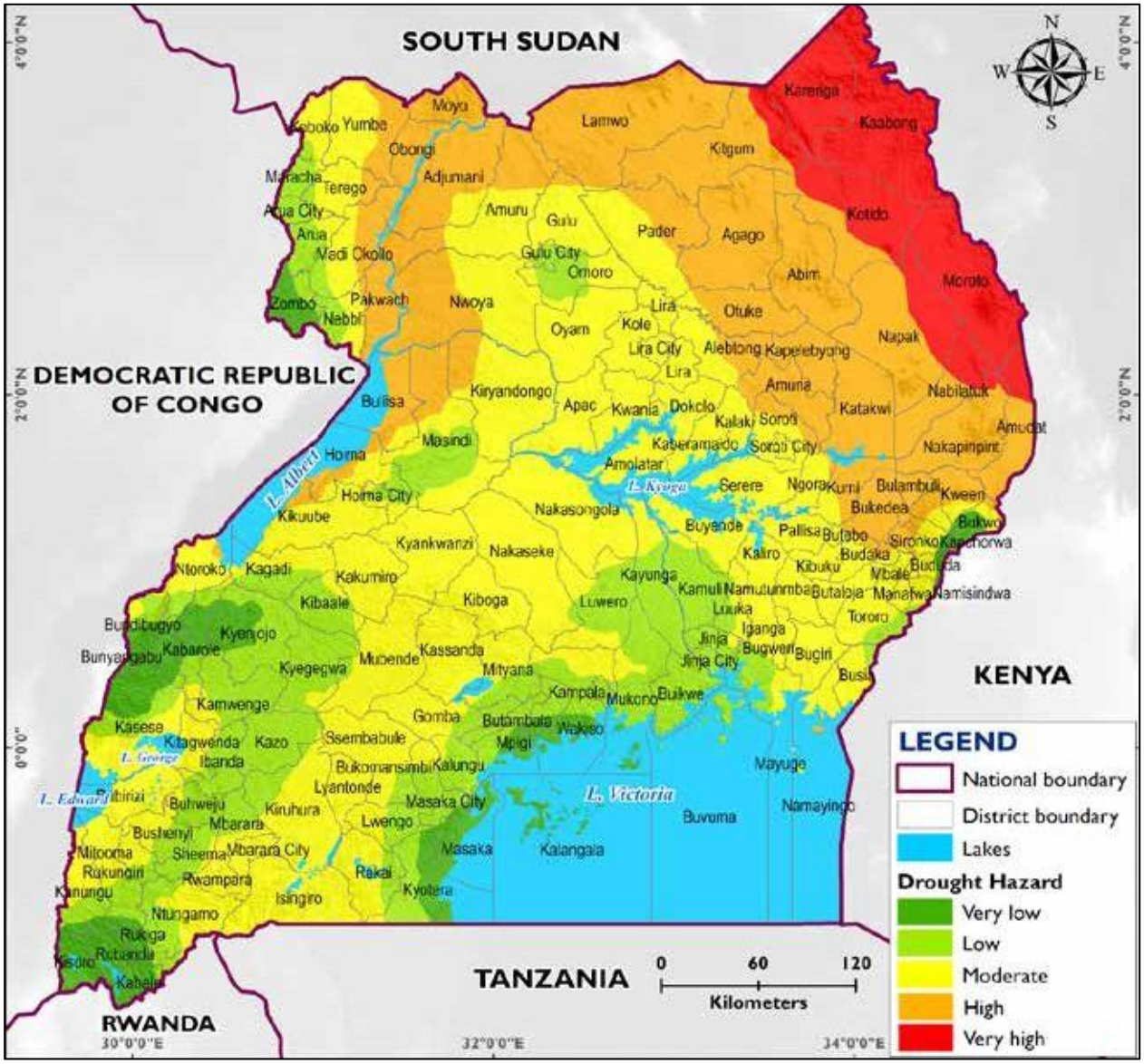
- **The average annual mean temperature is projected to rise in the future, for all seasons**. Monthly temperature change is expected to increase by 1.8°C for the 2050s and by 3.7°C by the 2090s. Projected rates of warming are greatest in the coolest season: June to September, with temperatures expected to increase by 1.5 to 5.4°C by the end of the century. The northern and southwestern regions of the country are projected to have the highest temperature increase of between 2.5 and 3°C compared to other areas especially in the 2050s.
- **Projected changes related to meteorological extremes: hot days and hot nights.** Hot days are expected to occur on 15-43 per cent of days by the 2050s and by 18-73 per cent of days by end of century. Nights that are considered 'hot' (>26°C) are expected to increase more quickly than hot days.
- **The average annual precipitation does not show a similar pattern across the country.** Mean total annual rainfall is likely to increase in some areas of the country, with decreases in others. Under RCP 8.5 the central parts of the country are projected to have reduced rainfall of about 5 to 15 per cent while other areas are not expected to have significant rainfall changes in this period. Seasonal rainfall for September, October, November is projected to increase.
- **Projected changes related to meteorological extremes: wet days and rainfall.** There is a likely increase for the number of consecutive wet days (rainfall ≥ 1mm per day) throughout the year, and more days with heavy precipitation (> 20mm) in each of the two rainy seasons in Uganda.

3.2 Climate Hazards

Droughts are among the most recurrent and widespread climate hazards in Uganda, with the northern, eastern, and western regions being affected frequently. Approximately 40 per cent of the country is moderately susceptible, 25 per cent is highly susceptible, and 7 per cent is very highly susceptible to drought. While much of the country is exposed, the Karamoja subregion - including districts such as Kaabong, Moroto, Kotido, Napak, and Amudat - experiences the most frequent and intense events. Droughts in Uganda are primarily meteorological, defined by rainfall deficits exceeding 15 per cent below the national average of 1,168 mm, resulting in reduced soil moisture and water availability. They occur throughout the year but are most prominent during the long dry season (June to August) and the short dry season (December to February), with regional and seasonal variability in intensity and impact. On average, drought-prone

areas experience an event every 1 to 6 years, and nationally, 10 to 15 droughts are recorded every five years. Most droughts last between 1 and 4 months, though prolonged events such as the 2005-2007 drought in Central Uganda have lasted up to 20 months. Intensities range from moderate to extreme, and both the frequency and severity of droughts are increasing, particularly in arid and semi-arid regions. Although projections for future rainfall vary, rising temperatures and evapotranspiration rates are expected to intensify drought conditions, posing growing risks to agriculture, water security, and livelihoods. The INFORM Risk Index scores Uganda's drought risk at 6.2 out of 10, ranking it among the top 27 most drought-prone countries. However, IPCC projections indicate low confidence in the direction of change in regional drought frequency and intensity (Figure 11).

Figure 22: *Drought hazard zonation in Uganda*

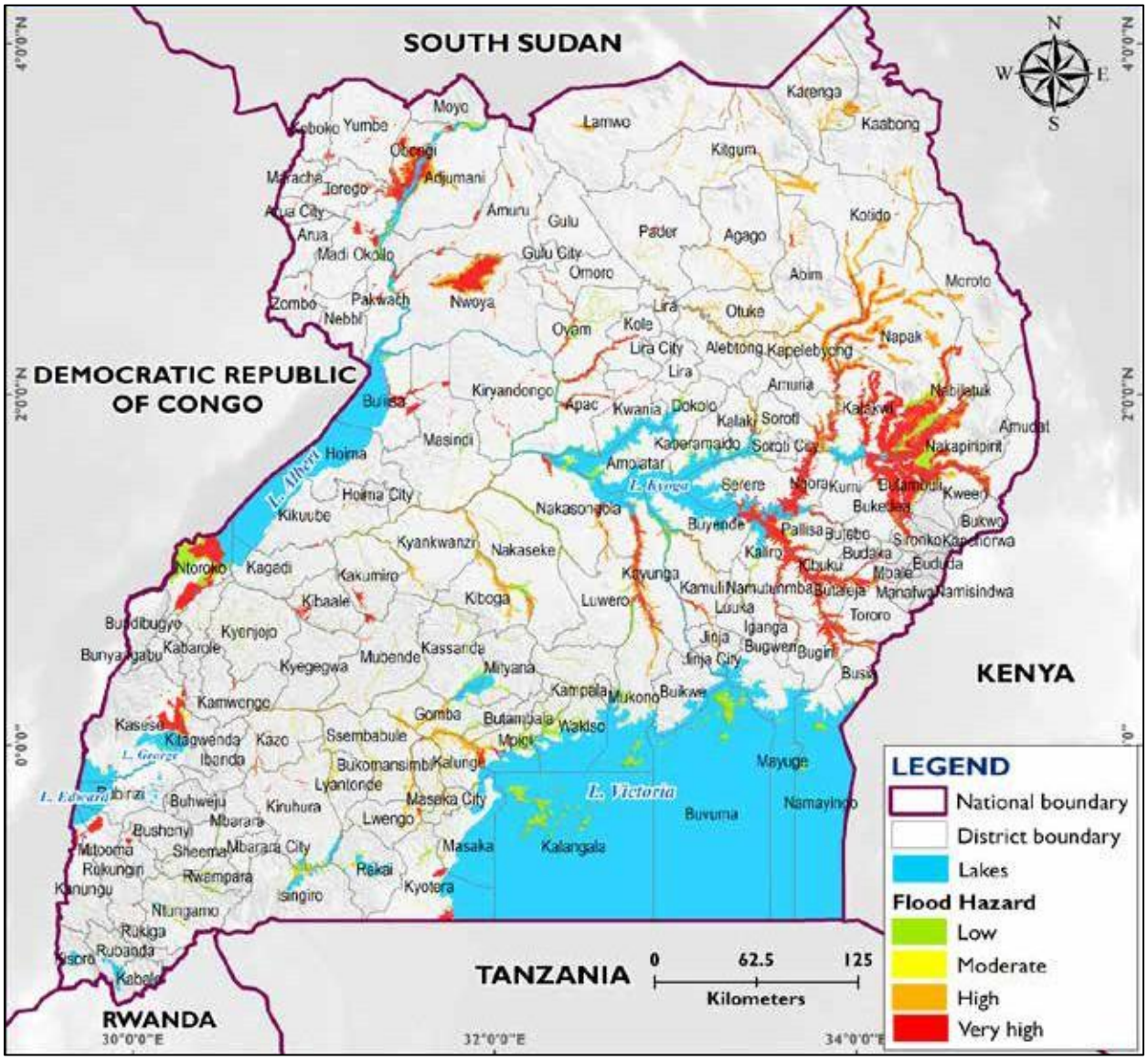


Data source: OPM, 2019

Floods are a recurrent and increasingly severe hazard in Uganda, primarily affecting low-lying areas, wetlands, and regions near rivers and lakes. Both riverine and flash floods occur regularly, particularly during the two rainy seasons (March-May and October-November), with northern Uganda also experiencing floods from June to August. Approximately 40.6 per cent of the country is highly exposed to flood hazards, with districts such as Napak, Katakwi, Bukedea, and Kasese among the most affected. Floods exceeding 1 meter in depth is common in the eastern and northern regions, particularly in Teso, Bugisu, and areas surrounding Lake Kyoga. Although flood events often last only a few hours, they can persist for several days depending on intensity and terrain, as observed in the Kasese region. Flood intensity is measured across five depth

categories, with many districts experiencing moderate to very high events (1-2+ meters). Climate models project future increases in total rainfall, storm intensity, and runoff - especially during already wet months - raising the likelihood of more frequent and intense flooding, in alignment with IPCC regional projections. Even in areas where average rainfall may decline, flood risk could worsen due to land degradation, urban soil sealing, and intense rainfall peaks. The INFORM Risk Index scores Uganda's flood risk at 3.9 out of 10 (Figure 12).

Figure 23: *Flood hazard zonation in Uganda*



Data source: OPM, 2019

Landslides are a highly localized but destructive hazard in Uganda, primarily affecting mountainous and hilly terrain in the eastern and western regions. These events are typically triggered by intense or prolonged rainfall and often coincide with the rainy seasons (March-May and August-November), although seismic activity and land use changes may also play a role. The most landslide-prone districts include Bududa, Bukwo, Kapchorwa, Kisoro, Kween, and Kasese - areas surrounding Mount Elgon, the Rwenzori Mountains, and the Mufumbiro volcanic range. Landslides occur suddenly, often lasting only seconds or minutes, but

their consequences can persist for years. They damage homes, roads which in turn affect the delivery routes for WASH services and supplies, and WASH infrastructure, pollute water sources, and render land unsuitable for agriculture. While most events are shallow in nature, deep landslides can also occur, particularly in lower-altitude zones. According to the National Risk and Vulnerability Atlas, 2.8 per cent of Uganda's land area is highly susceptible to landslides, and the eastern and western regions contain the greatest number of at-risk districts. The frequency of events is likely under reported due to limited data, but studies indicate they occur annually, and their incidence is expected to rise due to climate change and increasing land degradation. The INFORM Risk Index currently does not score landslide risk separately, but projections of more intense rainfall events suggest this hazard will become more frequent and severe in the future (Figure 13).

Figure 24: *Landslide hazard zonation in Uganda*

Data source: OPM, 2019

Landslides Disrupt Water Services in Eastern Uganda

In June 2021, heavy rainfall triggered landslides that severely damaged water infrastructure in the eastern districts of Namisindwa, Manafwa, and Tororo. The Soono Water Treatment Plant in Namisindwa was rendered inoperable when landslides swept away its structures and pipelines, causing widespread water shortages. As reported by the National Water and Sewerage Corporation (NWSC), the disaster disrupted water supply to thousands of residents, highlighting the vulnerability of essential infrastructure to climate-related hazards. Such events underscore the urgent need to climate-proof water supply systems - especially in landslide-prone, mountainous areas.

This assessment only considered the climate hazards that majorly impact the WASH sector i.e., drought, floods, and landslides (MWE, 2022b, UNICEF and SIWI, 2025).

Table 2: Definition of the hazards in Uganda, level of certainty based on IPCC 6 and INFORM RISK INDEX5

Hazard	Description / High level rationale	Inform Risk Ranking	IPCC 6 Certainty
Drought	Drought is one of the most frequent and severe climate hazards in Uganda, particularly affecting arid and semi-arid regions such as Karamoja. Driven by rainfall deficits and rising temperatures, meteorological droughts reduce water availability, strain WASH infrastructure, and heighten water stress. Events range from moderate to extreme and occur regularly across seasons, with projections indicating increased frequency and intensity due to climate change and accelerated evapotranspiration.	6.2	Low confidence in direction of change
Flooding	Floods in Uganda - both riverine and flash - are driven by intense or prolonged rainfall, deforestation, wetland encroachment, and poor land use. They occur mainly during the wet seasons and affect low-lying, urban, and mountainous areas. Flooding can severely damage WASH infrastructure, disrupt service delivery, and contaminate water sources, increasing the risk of disease. Climate change is expected to intensify rainfall extremes, worsening flood frequency, severity, and the overall vulnerability of communities.	3.9	High confidence of increase
Landslide	Landslides are typically triggered by heavy rainfall, seismic activity, or land use changes and are most common in Uganda's mountainous and hilly regions. Steep slopes and saturated soils accelerate their speed and impact. Climate change may increase landslide risk by intensifying rainfall and destabilizing slopes. These events can destroy WASH infrastructure, disrupt service delivery, and contaminate water sources, posing serious risks to health, safety, and long-term community resilience.	No Score	Low confidence in direction of change

3.3 Exposure and Vulnerability of the WASH Sector to Climate Hazards

Understanding how water, sanitation, and hygiene (WASH) services are exposed and vulnerable to climate hazards is essential for identifying priority adaptation needs and building climate resilience. This section assesses the extent to which human populations, water and sanitation-related infrastructure across Uganda is exposed to key hazards such as droughts, floods, and landslides. It also examines the sensitivity of WASH services to these hazards - how severely they are affected - and the adaptive capacity of infrastructure, services, and communities to manage, respond to, or recover from impacts.

4 The INFORM risk index is a global index that identifies countries at risk of crises and disasters that could overwhelm their national response capacity. INFORM > INFORM Risk > Methodology (europa.eu)/ The scale if from 0-10 with 10 as the highest risk.

By analyzing these dimensions together, the section provides a composite view of the WASH sector's vulnerability, laying the foundation for identifying targeted adaptation strategies. However, exposure analysis was not conducted for sanitation and hygiene due to absence of data.

3.3.1 Exposure of the Human Population

Based on the national population census of 2024 and the disaster mapping, exposure to climate hazards varies significantly across Uganda. As shown in Table 3, drought affects the largest share of the population, approximately 60 per cent of Ugandans, or over 27.5 million people - making it the most widespread and far-reaching climate hazard in the country. Landslides affect 21 per cent of the population (9.6 million people), particularly those residing in mountainous and hilly regions, while flood exposure remains relatively limited, affecting just 5.5 per cent of the population (2.5 million people). Exposure levels are broadly similar between men and women, though slightly more men (60.4 per cent) than women (59.7 per cent) are exposed to drought, while a marginally higher number of women are exposed to landslides and floods in absolute terms.

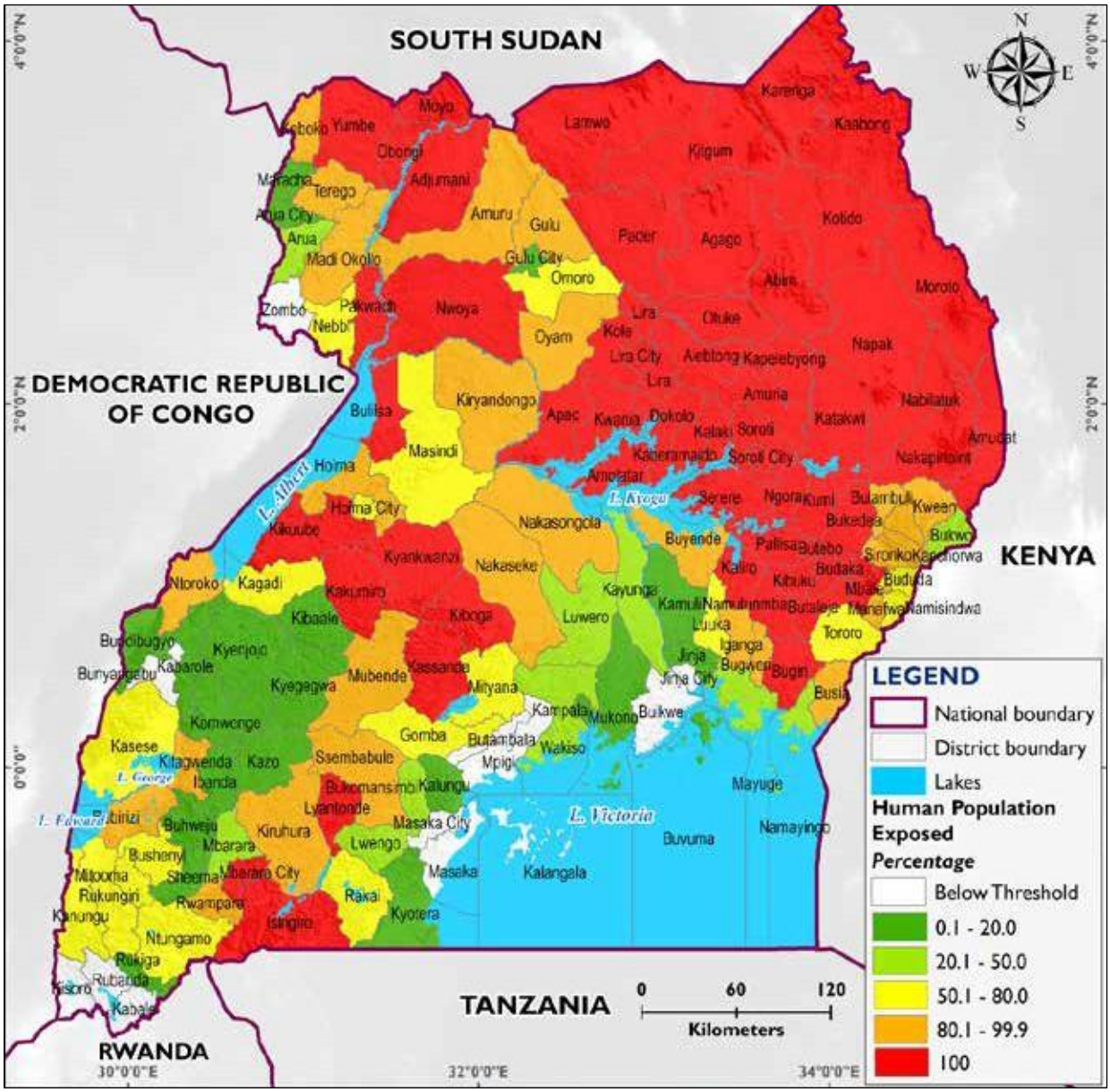
Table 3: Human population exposure to drought, landslides, and floods in Uganda

Human population	Exposure	Drought		Landslides		Floods	
		Number	%	Number	%	Number	%
Total Population	Exposed	27,567,850	60.0	9,583,304	20.9	2,540,545	5.5
	Not Exposed	18,367,196	40.0	36,351,742	79.1	43,394,501	94.5
	Total	**45,935,046**	**100**	**45,935,046**	**100**	**45,935,046**	**100**
Males	Exposed	13,583,822	60.4	4,696,265	20.9	1,251,145	5.6
	Not Exposed	8,911,208	39.6	17,798,765	79.1	21,243,885	94.4
	Total	**22,495,030**	**100**	**22,495,030**	**100**	**22,495,030**	**100**
Females	Exposed	13,984,029	59.7	4,887,039	20.8	1,289,400	5.5
	Not Exposed	9,455,987	40.3	18,552,977	79.2	22,150,616	94.5
	Total	**23,440,016**	**100**	**23,440,016**	**100**	**23,440,016**	**100**

District-level data reveal stark geographic disparities in exposure, with several districts facing overlap- ping risks from more than one hazard (OPM, 2019). Drought exposure is particularly widespread in the eastern, northern, and central regions. In over 60 districts[6], the entire population is classified as exposed to drought, including Abim, Amuria, Budaka, Kaabong, Katakwi, Lira City, Moroto, Nakapiripirit, Soroti City, and Yumbe (Figure 14). Landslide exposure is concentrated in the mountainous eastern and south- western regions, with the highest rates observed in Kapchorwa (99.9 per cent), Bududa (97.2 per cent), Kisoro (90.4 per cent), and Rubanda (88.6 per cent) (Figure 15). Although more localised, flood exposure is significant in the districts such as Ntoroko (58.3 per cent), Bulambuli (49.5 per cent), Nabilatuk (44.7 per cent), and Obongi (41.7 per cent) (Figure 16). Notably, districts such as Nakapiripirit, Nabilatuk, Katakwi, and Bukedea rank among the top ten for both drought and flood exposure, underscoring the compounding risks these areas face. Similarly, Bulambuli and Obongi are highly exposed to both floods and landslides. These intersections highlight the urgent need for integrated risk management strategies that can address multiple hazards simultaneously in the most vulnerable districts.

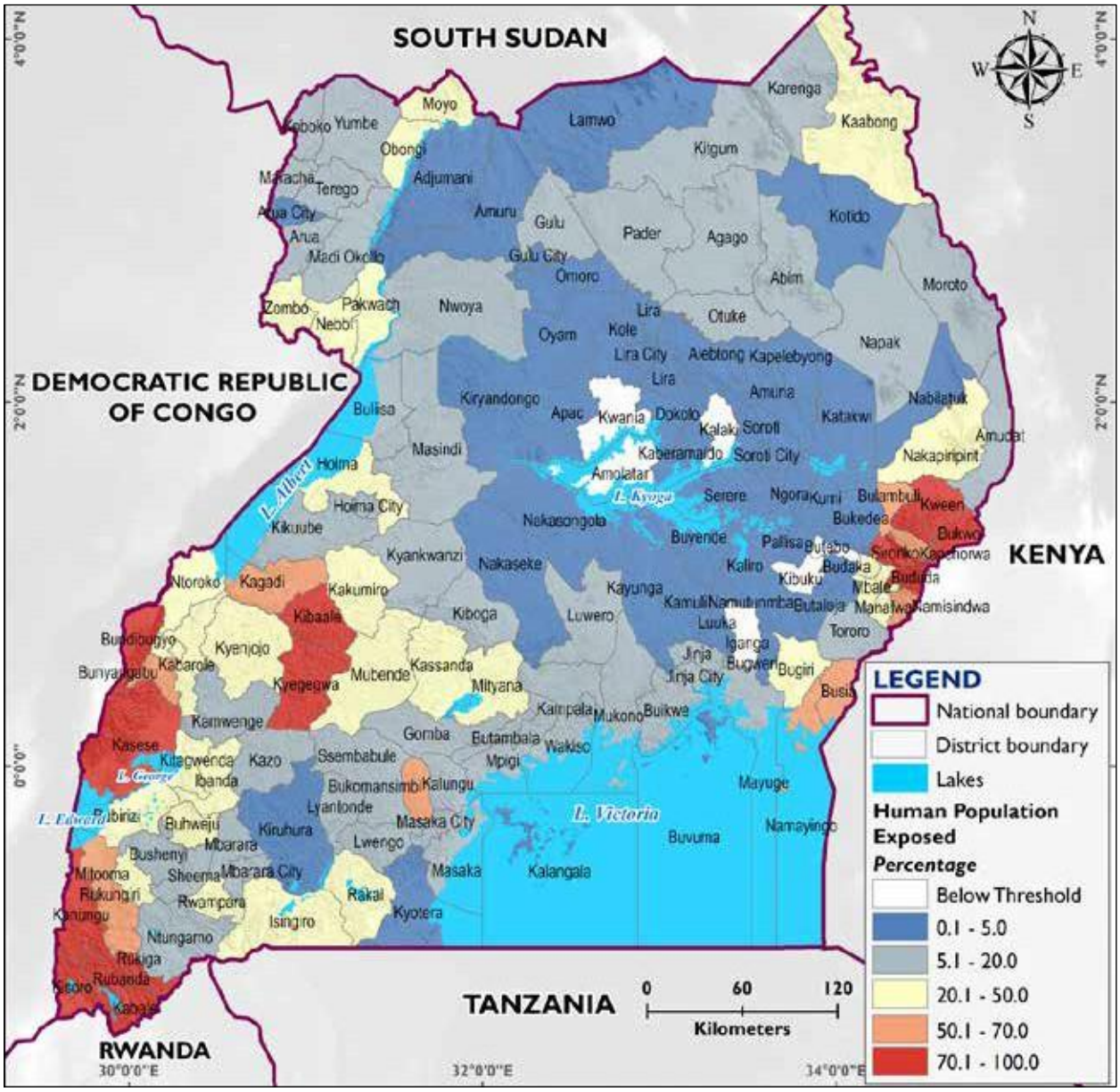
5 Districts with 100 per cent human population exposure to drought include: Abim, Adjumani, Agago, Alebtong, Amolatar, Amudat, Amuria, Apac, Budaka, Bugiri, Bukedea, Buliisa, Butaleja, Butebo, Dokolo, Isingiro, Kaabong, Kaberamaido, Kalaki, Kaliro, Kapelebyong, Karenga, Kassanda, Katakwi, Kiboga, Kibuku, Kikuube, Kitgum, Kole, Kotido, Kumi, Kwania, Kyankwanzi, Lamwo, Lira, Lira City, Lyantonde, Mbale, Mbale City, Mbarara City, Moroto, Moyo, Nabilatuk, Nakapiripirit, Namutumba, Napak, Ngora, Obongi, Otuke, Pader, Pakwach, Pallisa, Serere, Soroti, Soroti City, and Yumbe.

Figure 25: *Human population exposure to drought hazard*



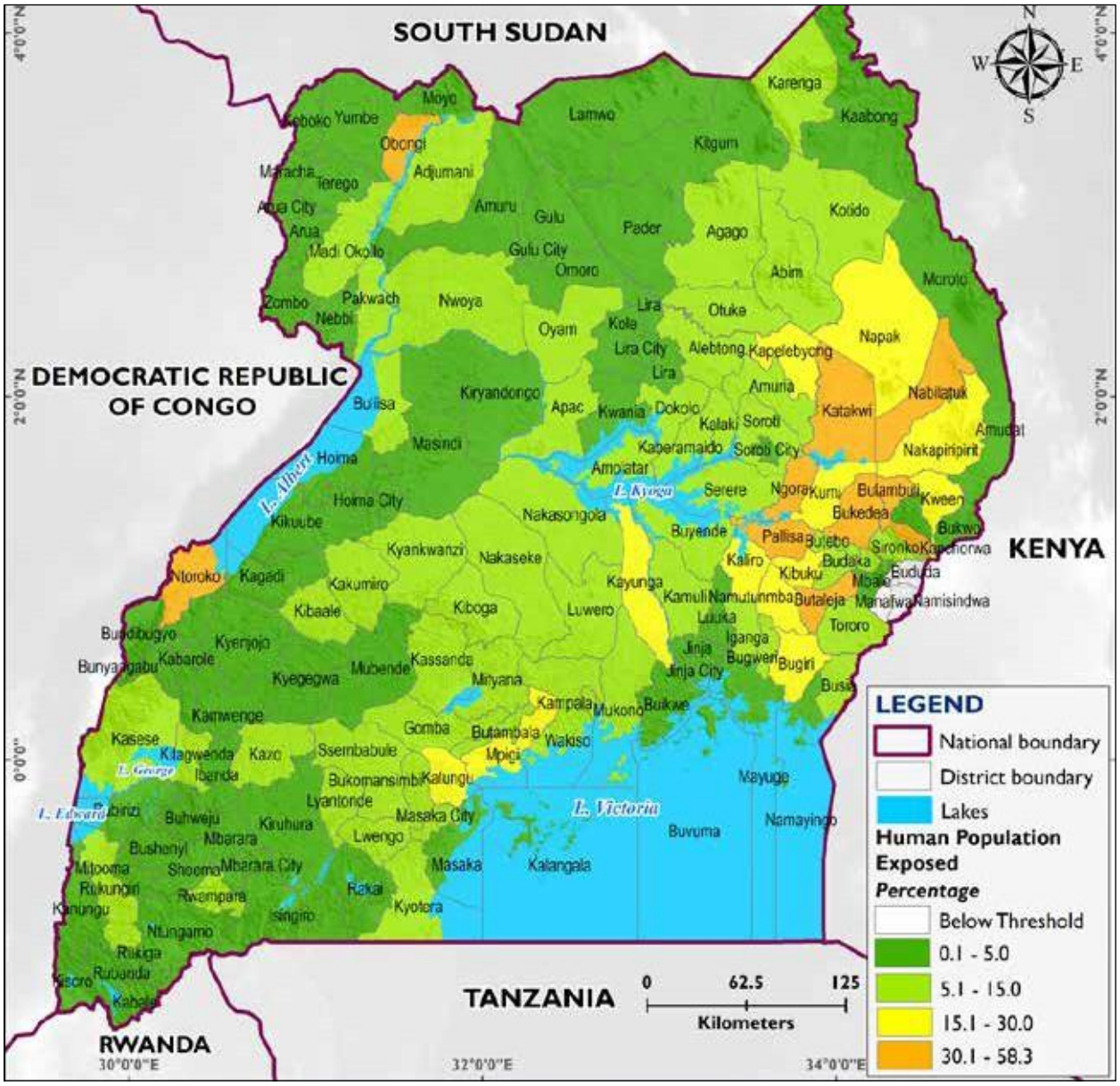
Data source: OPM, 2019

Figure 26: *Human population exposure to landslide hazard*



Data source: OPM, 2019

Figure 27: *Human population exposure to flood hazard*



Data source: OPM, 2019

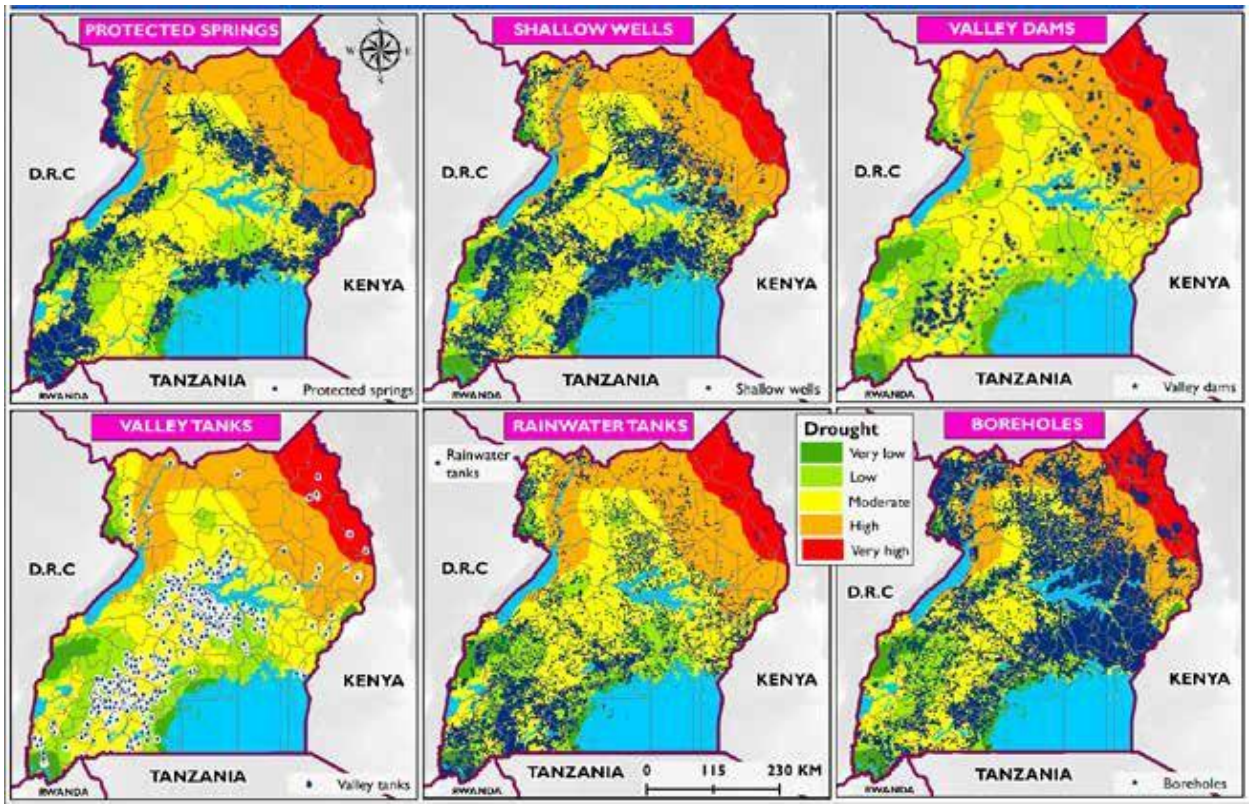
3.3.2 Exposure of Water Sources and Infrastructure

Water sources and infrastructure across Uganda are exposed to climate hazards to varying degrees, as shown in the table below. Drought poses the most significant threat, with over three-quarters of bore- holes (76.9 per cent) and a large share of valley dams (86.1 per cent), valley tanks (77.1 per cent), and rainwater harvesting tanks (66.8 per cent) exposed. Nearly half of all shallow wells (49.7 per cent) and 41 per cent of protected springs are also vulnerable. This underscores that both surface water and groundwater-dependent systems are at risk during prolonged dry spells. Geographically, the Karamoja sub-region - including Karenga, Kaabong, Kotido, Moroto, Napak, Nabilatuk, Nakapiripirit, and Amudat - hosts many of these highly exposed sources, making it particularly susceptible to water scarcity during drought periods (Figure 17).

Table 4: Exposure of water sources to drought, landslides, and floods in Uganda

Water sources	Exposure	Drought		Landslides		Floods	
		Number	%	Number	%	Number	%
Protected springs	Exposed	10,548	41.0	9,243	36.0	265	1.0
	Not Exposed	15,151	59.0	16,456	64.0	25,434	99.0
	Total	**25,699**	**100**	**25,699**	**100**	**25,699**	**100**
Shallow wells	Exposed	8,613	49.7	2,695	15.5	489	2.8
	Not Exposed	8,732	50.3	14,650	84.5	16,856	97.2
	Total	**17,345**	**100**	**17,345**	**100**	**17,345**	**100**
Valley dams	Exposed	329	86.1	29	7.6	25	6.5
	Not Exposed	53	13.9	353	92.4	357	93.5
	Total	**382**	**100**	**382**	**100**	**382**	**100**
Valley tanks	Exposed	495	77.1	66	10.3	14	2.2
	Not Exposed	147	22.9	576	89.7	628	97.8
	Total	**642**	**100**	**642**	**100**	**642**	**100**
Rainwater harvest tanks	Exposed	10,551	66.8	4,138	26.2	92	0.6
	Not Exposed	5,246	33.2	11,659	73.8	15,705	99.4
	Total	**15,797**	**100**	**15,797**	**100**	**15,797**	**100**
Boreholes	Exposed	20,566	76.9	2,727	10.2	596	2.2
	Not Exposed	6,163	23.1	24,002	89.8	26,133	97.8
	Total	**26,729**	**100**	**26,729**	**100**	**26,729**	**100**

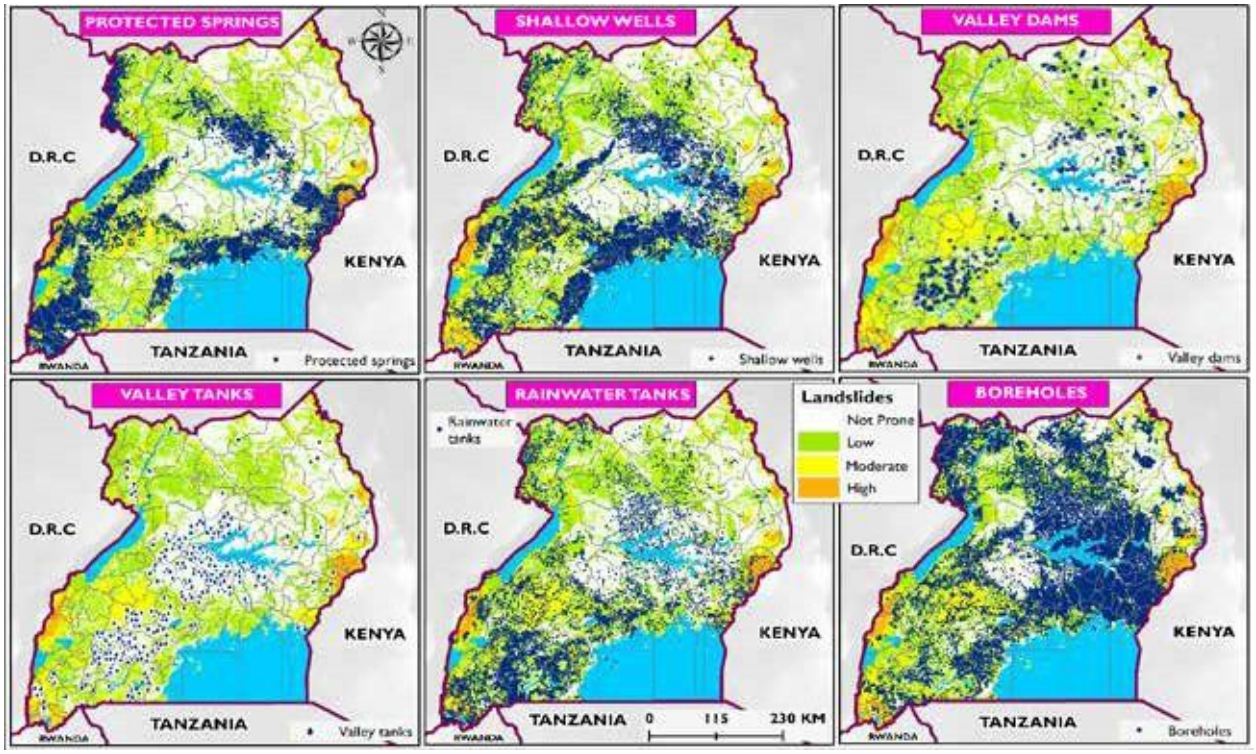
Figure 28: *Water sources exposed to drought hazard*



Data source: OPM, 2019

Landslides also pose a significant threat to water and sanitation infrastructure, particularly in mountainous areas of eastern and southwestern Uganda. Protected springs are the most affected water source, with 36 per cent exposed - likely due to their location on unstable slopes. Rainwater harvesting tanks (26.2 per cent) and shallow wells (15.5 per cent) also show moderate exposure, while boreholes (10.2 per cent), valley tanks (10.3 per cent), and valley dams (7.6 per cent) are less frequently impacted. Districts with the highest exposure to landslide-related damage include Kasese, Kween, Bukwo, Kisoro, Kapchorwa, Bundibugyo, Bududa, and Namisindwa (Figure 18). In addition to disrupting access to water and damage to the water supply infrastructure, landslides can also destroy latrines and other decentralized sanitation systems, leading to the direct contamination of surrounding land and water sources. Given the destructive nature of landslides, even limited exposure can have severe implications for local service continuity, water quality, and public health.

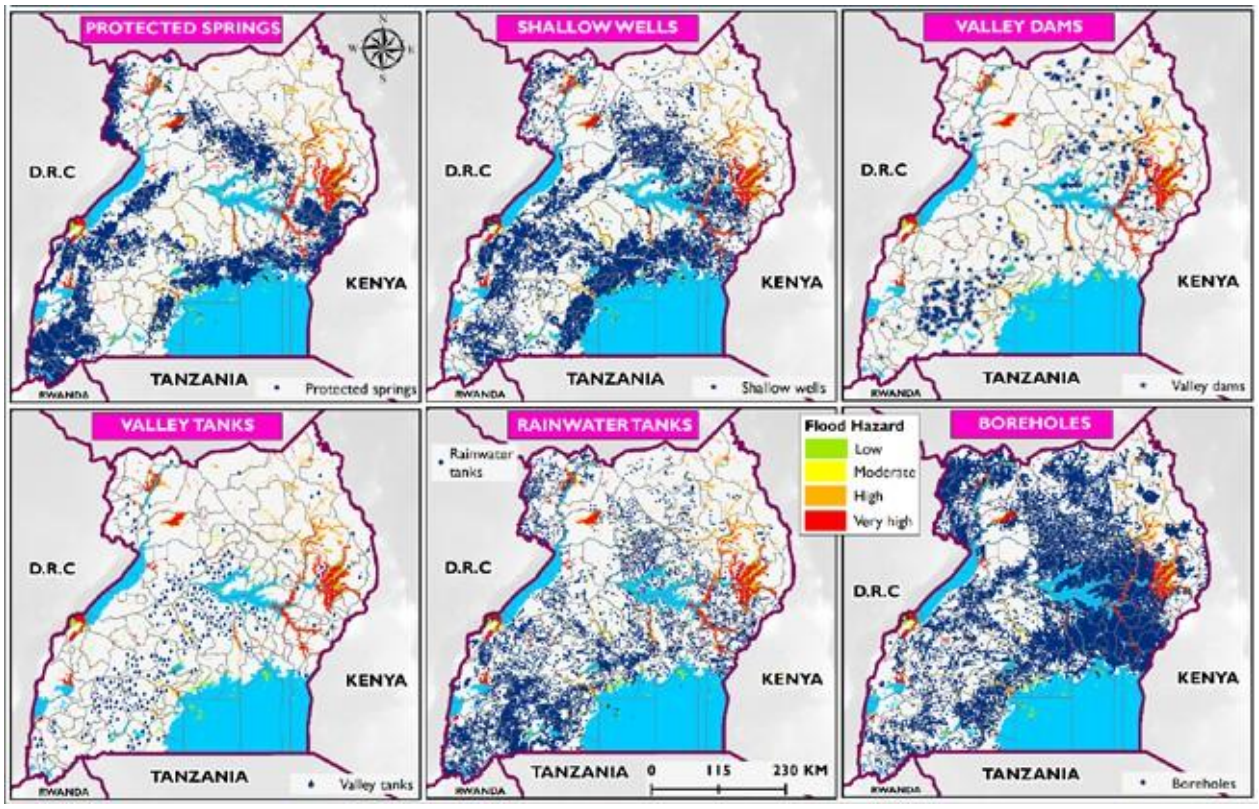
Figure 29: *Water sources exposed to landslide hazard*



Data source: OPM, 2019

Flood-related exposure of water sources is relatively low across Uganda, but the potential consequences are significant. Boreholes (2.2 per cent), shallow wells (2.8 per cent), and valley dams (6.5 per cent) show the highest flood expo- sure, though these remain below 7 per cent. Protected springs (1 per cent) and rainwater harvesting tanks (0.6 per cent) are rarely affected, likely due to their design or siting. However, in flood-prone districts - such as Butaleja, Obongi, Bulambuli, Ntoroko, Katakwi, Kasese, Sironko, Bukedea, and Ngora - even modest exposure can severely impact service continuity and water quality (Figure 19). In addition, centralized sanitation infrastructure (e.g., sewerage systems, septic tanks, and wastewater treatment plants, mainly in urban areas) and decentralized facilities (e.g., pit latrines, especially in rural areas) are particularly susceptible to flood damage. Floodwater often flushes out latrines and overload wastewater systems, resulting in environmental pollution and contamination of drinking water supplies. This amplifies the risk of disease outbreaks and highlights the urgent need for climate-resilient sanitation solutions alongside water infrastructure investment.

Figure 30: *Water sources exposed to flood hazard*



Data source: OPM, 2019

Notably, several water source types are exposed to multiple hazards, underscoring the need for integrated, climate-resilient design and planning. Among all sources, boreholes and shallow wells are the most exposed overall, especially to drought, with additional vulnerabilities to landslides and floods. Rainwater harvesting tanks show high exposure to both drought and landslides, particularly in hilly terrain. In contrast, protected springs and valley tanks demonstrate moderate exposure across several hazards, while valley dams, though fewer in number, are heavily exposed to drought. The least exposed sources overall are rainwater harvesting tanks and protected springs in flood-prone areas, suggesting they may offer more resilient options when properly sited and maintained. These findings highlight the importance of aligning infrastructure planning with local hazard profiles to ensure continued functionality and resilience under changing climate conditions.

Table 5: Exposure analysis for drought

Exposure to DROUGHT	Exposure description
Population	52 per cent of the population ,80.5 per cent of adults, 16,5 per cent of children , 64 per cent of women, 63 per cent of men, live in drought exposed areas. The population most exposed to drought lives in arid and semi-arid areas of North-eastern Uganda. Women: women and girls that fetch water from rivers, ponds, wells, water points, etc. are particularly exposed to drought hazard Children: girls in charge of fetching water from rivers, ponds, wells, water points, etc. are particularly exposed to drought Due to damage to infrastructure, specific population groups are diverted to lower levels of water and sanitation service (e.g., open defecation)

Table 6: Exposure analysis for flooding

Exposure to FLOODING	Exposure description
Population	26.3 per cent of the population with 34.4 per cent of adults and 33.5 per cent of children are exposed to floods of 1m depth or more. Dwellers close to water bodies are the most exposed. Over 80 per cent of the population in the districts of Katakwi, Otuke, Kitgum, Nwoya, Sembabule and Kalungu are exposed to floods of 1m depth or more. 21 per cent of primary schools, 35 per cent of secondary schools and around 1/3 of health facilities are exposed to floods of 1m or more. Children and other vulnerable groups are particularly exposed to this hazard, particularly if WASH facilities in schools are affected by flooding
Sanitation	latrines, sewers, and treatment plants in the flood prone areas are very exposed to flooding hazards, regardless of their magnitude. The frequent use of pit latrines (more than 80 per cent of Ugandans use a pit latrine of some sort), increases the possibility of contamination. Once the infrastructure is submerged by floodwaters, it becomes inactive and permanently damaged, compromising WASH services for the affected population. WASH facilities at exposed schools and health centers (including expositions of less than 1m) are at risk of temporary of even permanent damage, worsening the WASH situation of affected children and sick or wounded people. Pit latrines are particularly affected by flooding

Table of exposure to Landslide to be included.

Exposure to LANDSLIDES	Exposure description
Any particular group of people (if so specify)	According to the Atlas, 16,7 per cent of the population or 5,8 million Ugandan are moderately and highly exposed to landslides. 285 thousand dwellers are exposed, and house materials have no significate influence on exposure. Exposition is more pronounced on the extreme eastern (Mt. Elgon) and western regions (Rwenzori area), and further southwest towards the Mufumbiro volcanoes. Over 80 per cent of the population in Bulambuli, Kapchorwa, Bukwo, Kween, Kisoro and Rubanda districts are highly exposed to landslides. More than 60 per cent of the residential buildings in Kapchorwa, Bulambuli, Kween, Bukwo and Kisoro districts are exposed to landslides.
Critical (WASH related) infrastructure	The Atlas considers that landslides sensitivity is high for all sectors that have a relation to the WASH sector (such as water and environment, health, lands, housing and urban development). Considering that almost 70 per cent of Ugandans count on groundwater for their supply (shallow wells or deep boreholes) and that 83 per cent use pit latrines, critical WASH infrastructure is exposed in the exposed areas. According to the Atlas (2020): 15 per cent of shallow wells, 23 per cent of health centers, 19 per cent or primary schools and 18 per cent of secondary schools are exposed to landslides of moderate to high intensities.
Water sources (if so, are these primary water sources)	Estimates count for half of all soil lost in landslides being transmitted to the stream network thus affecting the quality of the water resources62F[1]. Around 36 per cent of protected springs are moderately or highly exposed to landslides, with the districts of Kapchorwa, Kween, Bulambuli and Bukwo having the highest percentages of their total protected springs exposed. In addition, 15 per cent of all shallow wells are moderately exposed to landslides, while 43 (0,2 per cent) are highly exposed (found in Bududa, Kapchorwa, Kasese, Rubanda, and Manafwa districts).

3.3.3 Exposure of the WASH Sector to Multi-Hazards

The WASH sector in Uganda is exposed to multiple climate-related hazards, with significant implications

for populations, water sources, and infrastructure. As outlined in previous sections and summarized in Table 5, both the human population and water supply systems face high levels of exposure to droughts, floods, and landslides, highlighting the widespread and overlapping nature of these threats. Infrastructure components such as water supply pipes and sanitation facilities also demonstrate notable vulnerability - particularly to landslides and floods - which can cause extensive physical damage and service disruptions, increasing the risk of faecal contamination and public health outbreaks.

Table 7: Exposure of WASH elements to the different hazards

WASH Elements	Drought	Landslides	Floods	Data Source
Human population	High	High	High	UBOS Census, 2024
Water sources	High	High	High	MWE, 2024
Water supply pipes	Very Low	High	Low	
Sanitation facilities	Very Low	High	High	

Geographically, the districts of Ntoroko, Nabilatuk, Nakapiripirit, Moroto, Bulambuli, Bukedea, Katakwi, Napak, Kotido, Kaabong, Karenga, Obongi, Madi Okollo, Adjumani, and Nwoya exhibit high levels of exposure - over 60 percent - to all three hazards. These overlaps highlight the need for multi-hazard risk mapping and integrated resilience planning that can protect critical WASH infrastructure and ensure service continuity under compound climate threats.

3.3.4 Sensitivity of WASH Services and Infrastructure to Climate Hazards

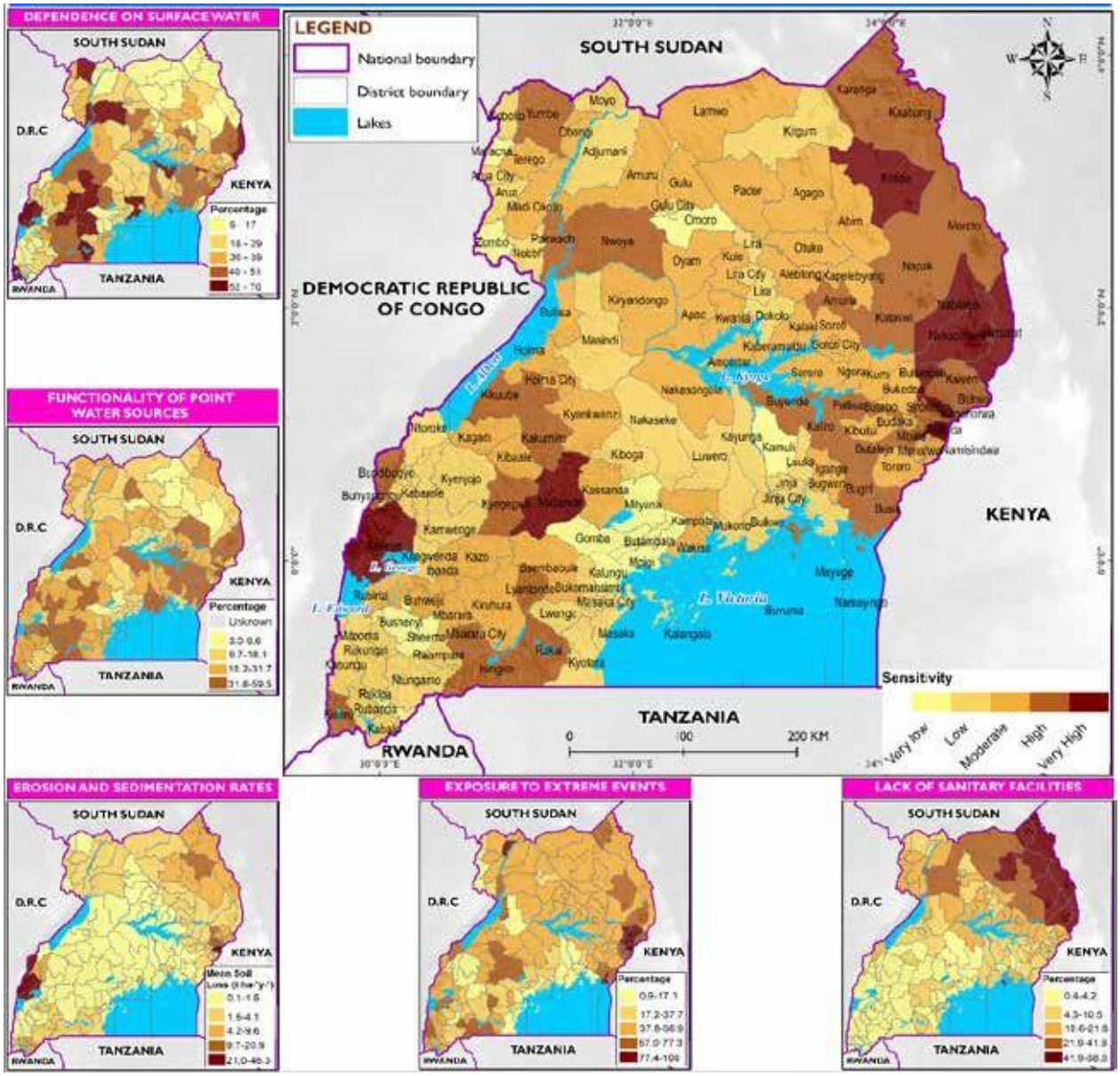
The sensitivity of the WASH sector in Uganda is shaped by a combination of environmental, technical, and service-related factors that exacerbate the impacts of climate hazards. These include reliance on surface water sources, low functionality of point water systems, high erosion and sedimentation rates, frequent exposure to extreme weather events, and inadequate sanitation coverage. Districts such as Kyegegwa, Wakiso, and Kakumiro demonstrate high dependence on surface water, heightening their susceptibility to contamination and water scarcity. In areas like Omoro and Kitgum, low functionality of water points compromises service reliability. Bududa and Kasese experience severe erosion, which damages water infrastructure and degrades water quality. Exposure to extreme events is particularly acute in districts such as Bulambuli, Kapchorwa, and Obongi, where WASH services are frequently disrupted. Meanwhile, sanitation deficits in Amudat, Nakapiripirit, and Moroto significantly increase vulnerability to waterborne diseases and environmental contamination. These findings highlight the need to enhance the reliability of water sources, expand access to sanitation, and mitigate environmental degradation to reduce sectoral sensitivity.

Table 8: WASH sensitivity indicators to multi-hazards in Uganda

Sensitivity indicators	Description	Data source	Hotspot districts
Dependence on surface water e.g., wetlands, rivers, and lakes	Reliance on surface water makes communities more susceptible to water scarcity, poor water quality, and health risks, especially as climate change continues to affect water resources.	Uganda Water Supply Atlas. MWE, 2024.	Kyegegwa (70 per cent), Wakiso (69 per cent), Kakumiro (69 per cent), Buvuma (67 per cent), Rakai (66 per cent), and Kazo (66 per cent)
Functionality of point water sources	The functionality of water sources directly affects a community's ability to reliably access safe and adequate water, which is essential for health, hygiene, and sanitation practices.	Uganda Water Supply Atlas. MWE, 2024.	Omoro (43 per cent), Kitgum (51 per cent), Butambala (53 per cent), Agago (55 per cent), and Gomba (57 per cent)
Erosion and sedimentation rates	Higher erosion introduces sediments and pollutants into water sources, making the water unsafe for direct use and increases the need for filtration and treatment.	Karamage et al., (2017)	Bududa (46.3 t ha-1 y-1), Kasese (37.5 t ha-1 y-1), Bundibugyo (28.9 t ha-1 y-1), Bulambuli (20.9 t ha-1 y-1), and Sironko (14.6 t ha-1 y-1)
Exposure to extreme events such as drought, floods, and landslides	Exposure to extreme events directly threatens the availability, quality, and safety of water and sanitation services.	OPM, 2019	Bulambuli (100 per cent), Kapchorwa (97 per cent), Obongi (96.1 per cent), Kween (95.5 per cent), and Bududa (93.2 per cent)
Lack of sanitation facilities	Lack of sanitary facilities increases the sensitivity of communities to the spread of diseases, water contamination, and other health-related vulnerabilities, especially in the face of climate or environmental challenges.	UBOS Census, 2014	Amudat (88.8 per cent), Nakapiripirit (82.1 per cent), Moroto (80.6 per cent), Kotido (77.2 per cent), Napak (70.9 per cent), Buvuma (58.1 per cent), and Kaabong (54.6 per cent)

Overall, districts with very high sensitivity to multiple hazards - such as droughts, floods, and landslides - include Kotido, Nabilatuk, Nakapiripirit, Amudat, Bulambuli, Bududa, Kasese, and Mubende (Figure 20).

Figure 31: *Sensitivity of the WASH Sector to multi-hazards in Uganda*



Data source: OPM, 2019

3.3.5 Infrastructure, Technical, and Community Adaptive Capacity

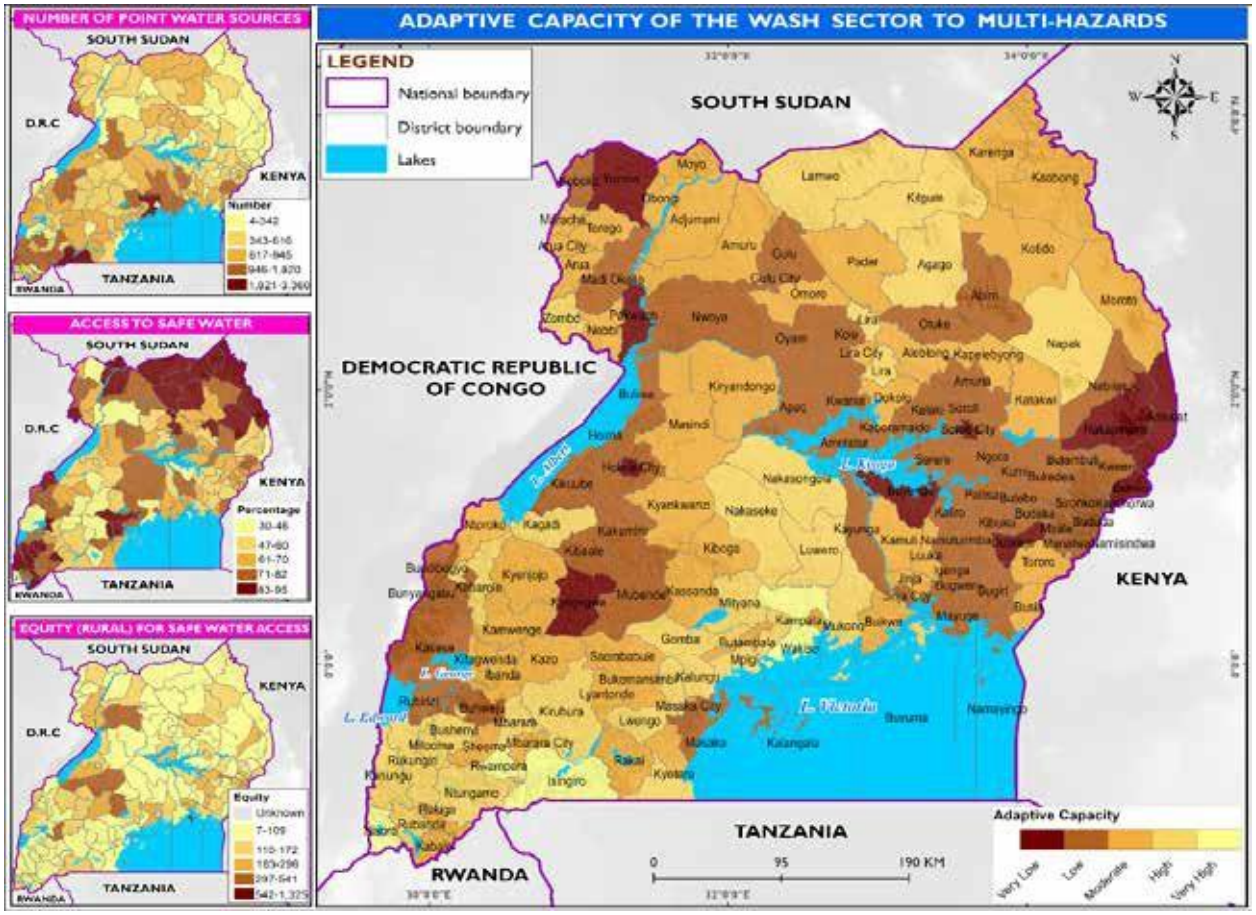
The adaptive capacity of Uganda's WASH sector varies considerably across districts and is shaped by the availability and diversity of water sources, uptake of climate-resilient technologies, access to safe water, and the equity of service delivery. Districts with a low number of point water sources - such as Amudat, Buvuma, and Karenga - are especially vulnerable to supplying disruptions, lacking redundancy in times of stress. Rainwater harvesting technology, which could serve as a buffer during dry spells, remains largely underutilised in many areas, with extremely low adoption rates reported in Adjumani, Budaka, and Butaleja (less than 0.05 per cent). Access to safe water is also limited in several districts, including Kyegegwa, Kakumiro, and Wakiso, where coverage remains below 35 per cent. Equitable access is another key concern; rural populations in Buvuma, Nwoya, and Kyankwanzi face notable disparities in water availability, weakening the ability of marginalised groups to adapt and recover from climate-related disruptions.

Table 9: WASH adaptive capacity indicators to multi-hazards in Uganda

Adaptive capacity indicators	Description	Data source	Hotspot districts
Number of point water sources	Having multiple water sources increases the resilience of the community to climate-related disruptions and diversifies a community's water portfolio.	MWE, 2018	Amudat (77), Buvuma (83), Karenga (93), Bukwo (104), and Nabilatuk (114)
Adoption of rainwater harvesting technology	Rainwater harvesting provides an alternative and supplemental water source, reducing dependence on traditional sources such as rivers, especially during the dry season.	UBOS Census, 2014	Adjumani (0.01 per cent), Budaka (0.02 per cent), Butaleja (0.03 per cent), Amuria (0.04 per cent), and Nebbi (0.05 per cent)
Access to safe water	Reliable access to clean, safe water significantly enhances a community's ability to cope with and adapt to climate-related challenges, such as increased droughts, floods, and contamination of water sources.	Uganda Water Supply Atlas. MWE, 2024.	Kyegegwa (30 per cent), Kakumiro (31 per cent), Wakiso (31 per cent), Buvuma (33 per cent), Kazo (34 per cent), Rakai (34 per cent), and Ssembabule (37 per cent)
Equity (Rural) for safe water access	Equitable access to water resources reflects a community's overall ability to adapt inclusively, ensuring that all groups, especially vulnerable populations, can cope with and recover from climate impacts.	Uganda Water Supply Atlas. MWE, 2024.	Buvuma (1,325), Nwoya (541), Kyankwanzi (516), Kakumiro (505), Kagadi (501), and Kassanda (465)

District-level analysis shows that adaptive capacity is unevenly distributed across the country. The districts with very high adaptive capacity to multi-hazards - such as Kisoro, Wakiso, Isingiro, and Rwampara - tend to combine relatively high infrastructure density, better access to safe water, and more equitable service delivery. In contrast, very low adaptive capacity is concentrated in areas such as Yumbe, Pakwach, Nakapiripirit, Amudat, Bukwo, Butaleja, Buyende, Kyegegwa, Hoima City, and Soroti City, where infrastructure gaps, low access, and inequities intersect (Figure 21). Strengthening adaptive capacity in these vulnerable districts will be critical to enhance resilience in the WASH sector and ensure inclusive, climate-resilient service provision.

Figure 32: *Adaptive capacity of the WASH Sector to multi-hazards in Uganda*



Data source: OPM, 2019

3.3.6 Composite Vulnerability of the WASH Sector

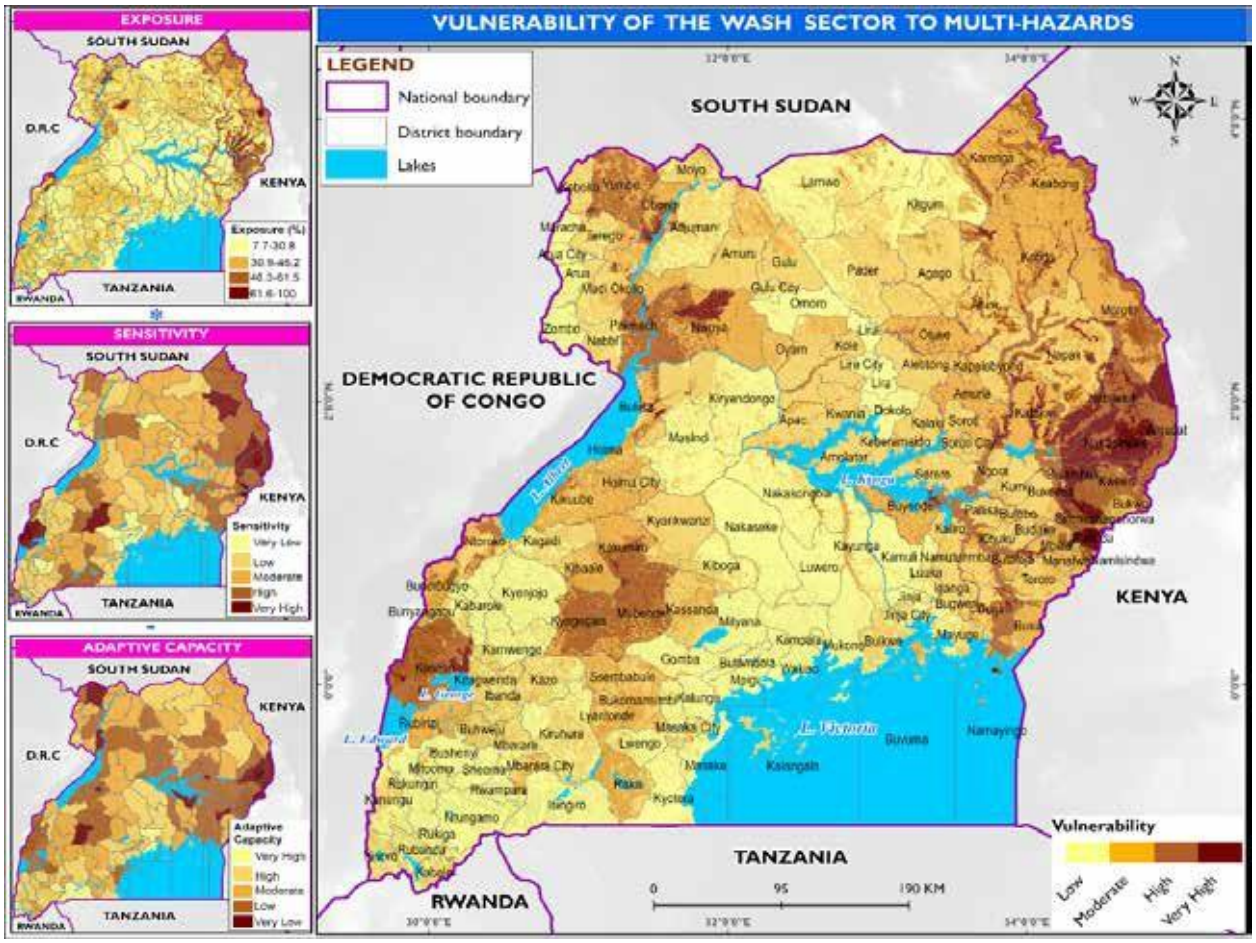
The composite vulnerability of Uganda's WASH sector has been assessed by integrating three key dimensions: exposure to climate-related hazards, the sensitivity of WASH systems to those hazards, and the adaptive capacity of communities and infrastructure to cope and recover. In line with international best practices, vulnerability has been conceptualized as a function of these three components, using the formula:

Vulnerability = (Exposure × Sensitivity) – Adaptive Capacity

This approach reflects how physical, social, environmental, and institutional factors interact to shape risk - revealing not just where hazards occur, but where systems are least equipped to withstand and respond to their impacts.

The results highlight a cluster of districts with very high composite vulnerability to multiple hazards, particularly in the eastern, northern, and western regions of the country (Figure 22). These include Amudat, Nakapiripirit, Nabilatuk, Bulambuli, Bududa, Kween, Bukwo, Moroto, Kotido, Kaabong, Karenga, Kapchorwa, Sironko, Ntoroko, Kasese, Bundibugyo, Rubirizi, Mubende, Kyegegwa, Pakwach, Nwoya, Katakwi, Napak, Obongi, and Yumbe. These districts face overlapping challenges: high levels of hazard exposure, degraded ecosystems, inadequate water and sanitation infrastructure, and limited institutional and community capacity to adapt. In contrast, the least vulnerable districts are primarily located in the central and southern regions, where more resilient systems and stronger adaptive capacity reduce overall vulnerability.

Figure 33: *Vulnerability of the WASH sector to multi-hazards in Uganda*



Data source: OPM, 2019

3.4 Climate Risks to the WASH Sector

Climate-related risks to WASH infrastructure and services in Uganda are wide-ranging and affect multiple components of the system, from ecosystems and infrastructure to service providers and users. The table below presents a structured overview of the key risks affecting the WASH sector, highlighting how climate hazards such as droughts, floods, and changing rainfall patterns compromise water availability, damage infrastructure, increase operational costs, and disproportionately affect vulnerable groups (Table 8). Where available, context-specific data - for instance, the widespread use of pit latrines and shallow wells - reinforce the urgency of integrating climate resilience into WASH planning and implementation.

Table 10: Climate-related risk in the WASH sector in the different strategic areas

Adaptation Area	Climate-Related Risks
Enabling environment	• Limited preparedness and emergency response capacity among WASH service providers and communities reduces the ability to respond to climate-related shocks. This is especially critical in flood- and landslide-prone areas where rapid response is vital.
	.

Adaptation Area	Climate-Related Risks
Water Resources and Ecosystems	• Uganda has lost over 40 per cent of its wetlands since 1994, reducing water retention and regulation capacity, particularly during floods and droughts.
	• Approximately 65 per cent of Uganda's population depends on groundwater, yet over- extraction is depleting aquifers and reducing pumping efficiency, especially during dry seasons.
	• Changes in rainfall patterns are degrading ecosystems and wetland biodiversity, impacting livelihoods reliant on fishing and farming.
	• Reduced rainfall and altered river flows are limiting surface water availability for both domestic and agricultural use.
	• Uganda's groundwater quality is at risk in several regions due to heavy metal leaching and over-abstraction, especially in mining zones.
	• Shifting rainfall and temperature patterns are altering vector habitats, increasing the prevalence of vector-borne diseases such as malaria.
	• Flooding and land degradation are increasingly leading to displacement of rural populations, straining water and sanitation services in host areas.
WASH Infrastructure	• Shallow wells (which serve 25 per cent of Uganda's population) and protected springs (22 per cent) are among the most climate-sensitive sources, with high exposure to both drought and flooding. Approximately 42 per cent of shallow wells and 35 per cent of protected springs are located in drought-prone areas, and 40 per cent of protected springs are exposed to flood risks.
	• Pit latrines - used by over 80 per cent of Ugandans - are frequently inundated during floods, leading to faecal contamination of surrounding environments, particularly in low-lying areas and schools.
	• Rainwater harvesting infrastructure, increasingly used as a supplementary water source, is vulnerable to damage from high temperatures and poor maintenance.
	• Water supply infrastructure, including pipes and pumping systems, is damaged by fluctuating water levels during droughts and floods, disrupting service continuity and increasing maintenance costs.
	• In flood-prone districts such as Butaleja, Bulambuli, and Obongi, infrastructure damage frequently compromises safe water access and increases disease risk.
	• Sanitation systems in schools and healthcare facilities are often not built to climate-resilient standards, resulting in service failures during landslides and heavy rains.
Service Providers and Service Delivery	• Water treatment costs rise during floods due to increased turbidity and contamination, straining local government budgets and impacting affordability for users.
	• Frequent repairs of damaged infrastructure divert resources from system expansion and quality improvement.
	• Water rationing during droughts reduces service reliability and may increase reliance on unsafe alternatives.
	• Limited staffing, technical expertise, and financial resources impede timely responses to climate-related disruptions.

Adaptation Area	Climate-Related Risks
Users and Wide Societies	• Women and children, who bear the primary responsibility for water collection in Uganda, face increased risks during droughts and floods, including longer travel distances, school absenteeism, and gender-based violence.
	• In informal and refugee settlements - where reliance on unimproved water sources is common - floods and poor drainage systems expose residents to faecal contamination and disease.
	• Households affected by water shortages often resort to alternative sources that are either less safe or significantly more expensive (e.g., water vendors), increasing financial vulnerability.
	• Agriculture accounts for 70 per cent of employment in Uganda. During droughts, reduced rainfall affects crops and livestock, undermining food security and income, while poor WASH access exacerbates health risks.
	• Limited solid and liquid waste management in high-density areas worsens public health impacts during floods, as waste systems overflow and contaminate the living environment.

Climate Change and Mobility impacts on WASH

Uganda is experiencing shifting patterns of human mobility driven by climate change, including cross-border and internal displacement. In the face of droughts, floods, and land degradation, mobility can serve as a survival strategy, enabling people to relocate, diversify their livelihoods, and access services. According to the Global Centre for Climate Mobility (2024), internal climate mobility in Uganda may increase fivefold - from 500,000 people in 2020 to as many as 5.1 million by 2050 - under a high- emissions and unequal development scenario. Many of these movements are expected to concentrate in the southwestern regions, where conditions for agriculture and water availability may remain more favorable. This shift could increase pressure on already strained WASH systems and natural resources, potentially fueling conflict over water allocation between host communities and migrants.

Transboundary Climate Risks and Water Security

Transboundary water systems like the Nile and Lake Victoria are shared by multiple countries. Uganda depends on these transboundary waters for nearly 35 per cent of its surface water. Climate-induced variability in rainfall, upstream water use, and pollution risk from neighboring countries can exacerbate national water stress. Strengthening regional cooperation on water management and climate resilience is essential to prevent future water conflicts and ensure equitable access across borders.

CHAPTER
04

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PRIORITISED WASH ADAPTATION ACTIONS

4.1 Considered components of WASH-NAP

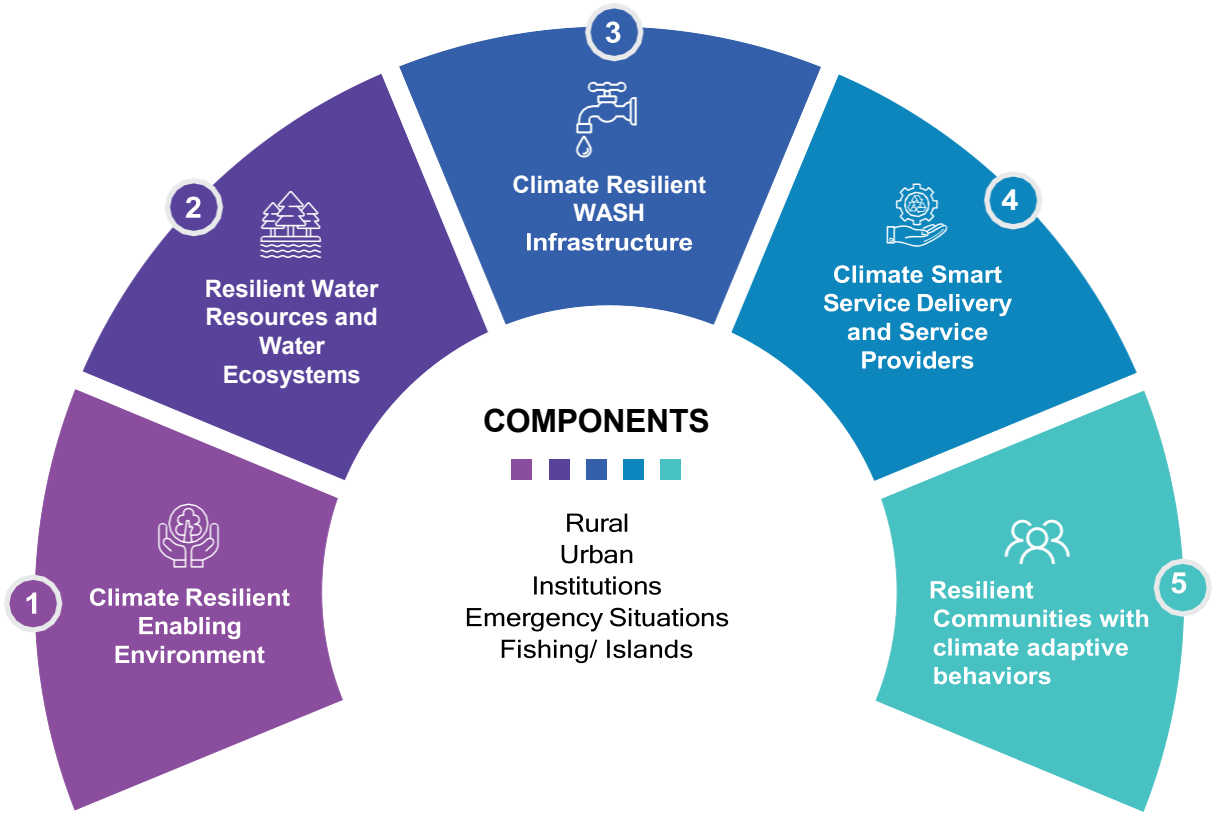
The key components of WASH integrated into the prioritized adaptation actions include rural WASH, Urban WASH, WASH in Institutions, Emergency WASH, WASH in refugee settlement and WASH in fishing villages and islands. This is because the communities' rural areas still rely on unsafe water sources and experience WASH infrastructural gaps. They are also faced with poor waste management and limited sanitation awareness that impact their sanitation and hygiene practices. In relation to urban WASH, the country is facing challenges emerging from rapid urbanization, development of informal settlements and increasing prices of water, but also associated with inadequate sanitation and poor solid waste management. At the institutions such as schools and health facilities, lack of WASH facilities and infrastructural gaps are addressed in this plan. Emergency WASH is hindered by inadequate preparedness, limited allocation of contingency funds and weak coordination structures which are also considered by this plan. In the refugee settlements, Uganda is faced with insufficient water supplies and overstretched infrastructure, latrine shortages poor waste management and menstrual hygiene challenges, while in fishing villages and islands, there is a low access to safe water, limited sanitation facilities, poor hygiene practices, and inadequate waste management that the WASH-NAP addresses.

4.2 Description of WASH-NAP Result Areas

To ensure that Uganda's WASH systems are resilient to climate risks, five strategic result areas were identified, aligned with the core components of climate-resilient WASH as defined by Sanitation and Water for All (SWA). These include: **(1) a climate-resilient enabling environment, (2) resilient water resources and ecosystems, (3) climate-resilient WASH infrastructure, (4) climate-smart service delivery and service providers, and (5) resilient users and wider societies**. Together, these results provide a comprehensive framework to guide adaptation planning and implementation across diverse settings - rural and urban communities, institutions, emergency contexts, refugee settlements, fishing/island communities. Following a brief description of each result area, this section outlines key adaptation actions designed to enhance resilience across all levels of the WASH system.

Figure 34: *Climate-resilient WASH components: adopted from SWA (2024) climate WASH definition paper*

more than 80 per cent of Ugandans use a pit latrine of some sort



4.2.1 Enabling Environment for Climate-Resilient WASH

A strong enabling environment is essential for effective governance and successful implementation of climate-resilient WASH initiatives. This includes policy and regulatory frameworks, which ensure that WASH policies and norms incorporate climate adaptation measures. An enabling environment with clear accountability is needed for resource mobilization that may facilitate the funding of climate-resilient infrastructure and services. Additionally, capacity development and knowledge management play a key role in equipping institutions, service providers, and communities with the necessary skills and tools to respond effectively to climate change. Technology and innovation contribute to resilient WASH through smart water system monitoring systems, alternative sanitation technologies, and efficient water purification methods. Moreover, stakeholder engagement and social inclusion ensure that all actors, including marginalized and vulnerable groups, are actively involved in WASH planning and decision-making, leading to sustainable and equitable results including sustainable service delivery.

4.2.2 Resilient Water Resources and Ecosystems

Inland and transboundary water resources and ecosystems are critical for sustainable WASH service delivery and must be protected against climate-induced risks such as droughts, flooding, and contamination. The protection of water sources, including wetlands and aquifers helps maintain natural water filtration and storage functions, ensuring long-term water availability. Improved water storage and conservation strategies, such as rainwater harvesting, increasing dam storage capacity, promoting groundwater recharge, and soil conservation measures enhance resilience to prolonged dry spells. Additionally, strengthening catchment-based water resource management such as watershed approaches ensures coordinated water governance, integrating local communities, institutions, and environmental agencies in sustainable water use and conservation practices. These interventions safeguard water availability, improve water quality, and reduce vulnerabilities to climate change.

4.2.3 Climate-Resilient WASH Infrastructure

Building climate-proof WASH infrastructure is crucial to withstand extreme weather conditions and natural disasters. Water supply infrastructure must be upgraded to increase water storage capacity, reduce water losses (non-revenue water), and improve climate-resilient distribution networks to sustain supply during periods of climate stress. For safely managed sanitation services, flood-resistant latrines and faecal sludge management improvements prevent contamination during heavy rains and flooding. Decentralized wastewater treatment systems reduce pressure on centralized systems, promote safe reuse of treated wastewater, and protect water bodies from pollution. By investing in climate-adaptive infrastructure, WASH services can remain functional and reliable despite climate disruptions. Pit latrine emptying services and treatment also need to be improved with private sector engagement.

4.2.4 Climate-Smart WASH Service Delivery

Climate change increases the demand for efficient, responsive, and resilient WASH service providers. Apart from resilient WASH infrastructure, strengthening institutions responsible for WASH service delivery ensure that they are equipped with the necessary technical capacity, regulatory frameworks, and financial resources to adapt to climate-related challenges. Additionally, enhancing emergency preparedness and response capacity for WASH services is critical for maintaining water supply and sanitation services in times of disaster, such as floods, droughts, and disease outbreaks. These measures involve establishing early warning systems, pre-positioning emergency WASH supplies, and training response teams to mitigate service disruptions and reduce health risks. Strengthening WASH service delivery ensures continued access to safe water and sanitation, even in climate- stressed environments.

4.2.5 Resilient communities with climate-adaptive behaviors

The active participation of users and communities is fundamental in creating resilient and sustainable WASH systems as their understanding related to the adverse impact of climate and potential adoptive measures could be enhanced. Strengthening Community-Led Total Sanitation, Market-based Sanitation, Incentives, behavioral change campaigns, etc. with climate considerations would encourage communities to adopt climate-sensitive sanitation practices, such as building resilient latrines and improving waste management. Promoting hygiene behaviors under climate stress ensures that individuals maintain proper hygiene even during water shortages or flooding, reducing potential disease outbreaks. Furthermore, the integration of early warning systems and community-based disaster risk reduction for WASH enhances preparedness by providing timely climate information and response strategies to mitigate risks. These approaches empower communities to take ownership of their WASH systems and adapt to climate challenges proactively.

4.3 Results Framework (Theory of Change)

Figure 35: *Results framework for climate-resilient WASH services*

IMPACT	**Uganda's Water, Sanitation and Hygiene services are enhanced ensuring sustainable, equitable and climate-smart WASH solutions that effectively address the challenges posed by climate change.**				
OUTCOME	**Enhanced Climate Resilient Enabling Environment**	**Water ecosystems monitored and managed to withstand climate hazards**	**Improved access to Climate-Smart WASH Infrastructure**	**Enhanced Climate-Resilient WASH service delivery**	**Improved Climate-Resilient WASH Practices in communities**
OUTPUT	**Climate Resilient Enabling Environment** 1. Climate resilient WASH systems strengthened with effective governance and policy framework at all levels (transboundary, national, catchment, district and sub-county) 2. Finance and resource mobilization strengthened 3. Capacity, innovations and knowledge management enhanced at all levels. 4. Climate-smart WASH technology and innovations promoted. 5. Stakeholders coordination strengthened.	**Climate Resilient Water Resources and Ecosystem Management** 1. Critical water ecosystems protected and restored, and water resources (aquifers and watersheds) protected. 2. Water resources' infrastructure established and technologies for sustainable water availability and quality enhanced. 3. Catchment-based water resource management strengthened. 4. Long term monitoring systems implemented and maintained	**Climate-resilient Infrastructure** 1. Climate-resilient water supply infrastructure for HH, communities, HCFs and Schools designed, developed, and maintained. 2. Water conservation and storage for climate resilience enhanced 3. Climate-resilient sanitation and wastewater management systems developed and maintained	**Climate-Smart Service Delivery** 1. Capacity of public and private institutions responsible for climate resilient WASH service delivery strengthened 2. Emergency response capacity for WASH service providers enhanced	**Climate Resilient Users and Community** 1. Climate-resilient sanitation and hygiene behavior strengthened. 2. Community knowledge, attitudes and behavior on climate-resilient sanitation enhanced. 3. Community knowledge and attitudes on climate-resilient hygiene practices enhanced. 4. Community-based climate-risk early warning systems enhanced. 5. Local WASH markets and climate-resilient supply chains strengthened.
ACTIVITY	1. Develop and enforce climate-resilient WASH policies, guidelines and standards. 2. Institutionalize climate-sensitive water resource management. 3. Strengthen multi-sectoral coordination (WASH, health, agriculture and environment). 4. Establish climate finance mechanisms (climate funds, PPPs, infrastructure bonds). 5. Develop financial incentives for climate-resilience WASH service providers. 6. Training WASH stakeholders in climate resilience. 7. Integrate climate resilience into WASH academic curricula. 8. Promote climate-smart WASH innovations including efficient water-use technologies. 9. Integrate climate resilience data into national water and environmental systems. 10. Establish national multi-stakeholder WASH secretariate and subnational coordination platforms.	1. Demarcate and restore degraded buffer zones of wetlands, rivers and lakes. 2. Integrated climate adoptive catchment management 3. Strengthen water resources assessment and monitoring 4. Map and gazette groundwater recharge 5. Promote soil and water conservation practices. 6. Reforestation/afforestation around aquifers 7. Promote rainwater harvesting and flood control structures. 8. Identify and develop artificial groundwater recharge sites and locations. 9. Promote reuse of water and wastewater 10. Promote collaboration on transboundary catchment management. 11. Establish and strengthen catchment-based water management governance structures. 12. Install early warning systems to monitor climate-related hazards 13. Monitor water availability and quality using climate-sensitive indicators to track health of ecosystem and inform WASH service planning.	1. Redesign existing water supply systems to withstand climate hazards. 2. Construct rainwater harvesting systems at all levels. 3. Upgrade existing water distribution infrastructure. 4. Develop and maintain large-scale multipurpose reservoirs. 5. Construct climate-adaptive sanitation facilities in public institutions. 6. Promote decentralized wastewater treatment and reuse and eco-friendly sanitation systems. 7. Motorize high-yielding boreholes using clean energy (wind & solar). 8. Promote water-use efficient technologies in agriculture, industry, institutions and households. 9. Promote nature-based solutions.	1. Establish performance-based accountability frameworks for WASH institutions to improve. 2. Support startups in developing climate-resilient WASH innovations. 3. Develop emergency response plans and preposition WASH supplies in disaster-prone areas. 4. Establish mobile WASH units for climate-related emergencies. 5. Enhance data collection and reporting systems for WASH institutions to improve evidence-based decision-making. 6. Training WASH service providers on emergency response protocols and disaster preparedness.	1. Integrate and deliver climate risk awareness and solutions into CLTS/CATS programming to create a demand for CR WASH services 2. Develop climate-proof sanitation solutions for vulnerable communities. 3. Establish community water source protection committees. 4. Develop and deliver training to communities on climate risk assessments of WASH services and water resources. 5. promote collaboration on transboundary WASH risk reduction measures. 6. Implement water conservation awareness programs. 7. Promote collaboration on transboundary WASH risk reduction measures.

4.4 Prioritized WASH-NAP Result Based Adaptation Actions

4.4.1 Outcome Result 1: Enhanced Climate Resilient Enabling Environment

Strengthening the enabling environment is foundational to advancing climate-resilient WASH systems in Uganda. While climate risks are escalating, current policy, institutional, and financing frameworks remain insufficiently equipped to manage, anticipate, and respond to disruptions. Gaps include the absence of climate-resilient WASH standards, poor enforcement of legal protections for ecosystems, limited financial resources for climate resilience, limited data, fragmented governance, and weak integration of climate risk into local WASH planning.

Additional barriers include a heavy dependence on donor support, limited domestic financing for adaptation and weak mechanisms for knowledge exchange, innovation, and inclusive governance. Gender equity and the needs of marginalized populations remain inadequately addressed. In parallel, the use of standardized top-down technologies has often proven infeasible in diverse local contexts due to cost and terrain.

To address these interlinked challenges, this result area sets out a comprehensive package of adaptation actions, clustered under six priority areas:

1. Climate resilient WASH systems strengthened with effective governance and policy framework at all levels (transboundary, national, catchment, district and sub-county)

This area focuses on developing and enforcing climate-resilient WASH policies, regulatory frameworks, and technical standards that reflect the realities of Uganda's diverse regions and climate risks. In addition to updating legal tools and guidelines, this output prioritizes stronger enforcement capacity particularly at national, district and catchment levels, to protect wetlands, water catchments, and public infrastructure from degradation and encroachment.

Action 1.1: Developing and enforce climate-resilient WASH policies, guidelines, regulatory frameworks, and context-sensitive technical standards that is adoptable to local realities and topographic conditions.

Action 1.2: Integrating climate risk assessments into district and sub-county WASH planning and budgeting processes, using participatory and bottom-up approaches to identify appropriate, locally feasible technologies and service models.

Action 1.3: Promoting adherence to water-use permit conditions and strengthen local governance mechanisms such as water user committees and observatories to ensure equity and sustainability.

Action 1.4: Developing and operationalizing contingency plans for emergency WASH responses in areas prone to displacement, floods, landslides and disease outbreaks.

Action 1.5: Enforcing legal frameworks to prevent degradation and encroachment on wetlands and water catchment areas, through targeted institutional capacity building, improved compliance monitoring, and stronger enforcement mechanisms at national and sub-national levels.

Action 1.6: Training national and sub-national institutions to apply environmental, social, and gender safeguards in climate-resilient WASH planning.

Action 1.7: Strengthening climate-sensitive monitoring and reporting systems, including early warning, water quality surveillance, and real-time risk data.

2. Finance and Resource Mobilization strengthened

This area promotes a shift towards more sustainable, diversified, and locally managed financing for climate-resilient WASH services. Uganda's heavy reliance on donor funding poses a risk to most needed expansion of much needed resilient WASH resilient infrastructure development and long-term service continuity. To reduce this vulnerability, it is essential to establish dedicated climate finance

resource mobilization mechanisms, increase domestic investments, and engage the private sector. This output also supports the development of bankable proposals and incentives to attract and steer resources toward resilience.

Action 1.2.1: Establishing a dedicated national climate adaptation fund for the WASH sector, with clearly defined governance structures and transparent mechanisms for resource mobilization, allocation, and access–particularly targeting sub-national actors and high-risk communities.

Action 1.2.2: Mobilizing climate finance through global WASH and climate funds, infrastructure bonds and increased domestic budget allocations for climate-resilient WASH investments, particularly in vulnerable and underserved areas.

Action 1.2.3: Strengthening public-private partnerships to catalyze investment in sustainable and climate- resilient WASH services.

Action 1.2.4: Developing performance-based financial incentives to encourage climate-smart investments by WASH service providers.

Action 1.2.5: Developing and submitting bankable project proposals for climate-resilient WASH, targeting domestic and international funding sources.

3. Capacity, Innovations and Knowledge Management enhanced at all levels

This area promotes skills and development of institutions, private sector and CSOs who would contribute to the equitable sector development. Encouragement and investments will be made on the local innovations, and knowledge-sharing platforms to accelerate WASH adaptation at all levels.

Action 1.3.1: Training WASH professionals, local authorities, and CSOs on climate-resilient WASH practices and technologies, including nature-based solutions.

Action 1.3.2: Establishing and maintaining digital platforms for collecting and sharing adaptation experiences and best practices.

Action 1.3.3: Supporting research partnerships to improve evidence on climate-WASH linkages and promote context-specific solutions.

Action 1.3.4: Training WASH professionals on nature-based solutions and climate-smart water management.

Action 1.3.5: Conducting periodic knowledge-sharing on climate resilience in WASH for service providers and institutions.

Action 1.3.6: Advocating for integration of climate adaptation into the curriculum of WASH-related academic and vocational training programs.

Action 1.3.7: Engaging media, schools, and local influencers to promote hygiene behaviors and water safety under climate stress.

4. Climate-smart WASH technology and Innovations promoted

This area supports the integration of climate resilient technology and innovations into WASH planning and decision-making at district and sub-county levels. While national frameworks provide overall direction, locally grounded planning is essential to ensure relevance, feasibility, and ownership, especially where terrain, social needs, and climate vulnerabilities vary widely. The output also promotes integration of climate smart technologies and innovative solutions into existing WASH information and management systems within the local governments.

Action 1.4.1: Developing /promoting climate-smart WASH management systems.

Action 1.4.2: Supporting the research and development of innovative sanitation and water solutions.

Action 1.4.3: Integrating climate resilience data in the Water and Environment Information System (WEIS).

Action 1.4.4: Promoting water-use efficient technologies in agriculture, industry, institutions, and households.

5. Stakeholder Coordination Strengthened.

This output will improve on the coordination of key national multi-stakeholders in WASH to facilitate the development and implementation of Climate Resilient WASH interventions

Action 1.5.1 Establishing national multi-stakeholder WASH secretariat that may include MOWE, MOH, MOES, MOLG, MOFPED, relevant UN agencies and development partners.

Action 1.5.2: Establishing sub-national multi-stakeholder WASH technical working groups in climate vulnerable regions comprising of the four regional Water Management Zones (WMZ) Albert WMZ, Kyoga WMZ, Upper Nile WMZ and the Victoria WMZ and the subsequent Catchment Management Organizations

Action 1.5.3: Establishing community WASH feedback platform to track performance and reliability of WASH infrastructure during and after climatic events though districts.

4.4.2 Outcome Result 2: Water ecosystems monitored and managed to withstand climate hazards

Uganda's water resources are under increasing pressure from a convergence of climate-induced hazards and unsustainable environmental practices. Recent evidence highlights that over 40 per cent of Uganda's wetlands have been lost since 1994, severely diminishing natural water retention and regulation capacities during both floods and droughts. Concurrently, approximately 65 per cent of the population - relying on groundwater - faces the dual threats of aquifer depletion from over-extraction and contamination risks from heavy metal leaching, particularly in mining zones.

Droughts, altered precipitation patterns, and heightened evapotranspiration are reducing groundwater recharge and destabilizing river and wetland flows. These hydrological changes, coupled with deforestation, wetland encroachment, and soil erosion, are undermining the ecological integrity of watersheds and aquifers. Consequently, the degradation of ecosystem and wetland biodiversity not only diminishes water availability for domestic and agricultural purposes but also heightens exposure to vector-borne diseases and strains water and sanitation services - especially in rural and water-stressed regions.

Furthermore, rapid climate variability is exacerbating both flooding and land degradation. These phenomena are causing displacement of rural populations and intensifying competition for water resources in host areas, thereby directly challenging the sustainability of WASH services. Despite these urgent issues, Uganda's natural infrastructure - forests, wetlands, and catchment areas - remains under-protected and underutilized in current adaptation planning.

To address these challenges, the WASH NAP identifies three key adaptation priority areas and associated actions:

1. Critical water ecosystems protected and restored, and water resources protected

This area focuses on safeguarding wetlands, rivers, lakes, and aquifers from degradation, while restoring natural buffer zones that play a key role in regulating water flows and maintaining water quality following watershed/ catchment development approaches.

Action 2.1.1: Demarcating and restoring degraded buffer zones of wetlands, rivers, and lakes to enhance ecosystem function and water retention.

Action 2.1.2: Mapping and gazetting groundwater recharge areas to protect critical aquifers from overexploitation and land use pressure.

Action 2.1.3: Establishing soil and water conservation measures (e.g., contour bunds, terraces) to reduce erosion and improve infiltration.

Action 2.1.4: Implementing reforestation and afforestation programmes in degraded catchment areas to support climate regulation and water cycle stability.

Action 2.1.5: Strengthening water resources assessments and monitoring.

2. Water resources infrastructure established and technologies for sustainable water availability and quality enhanced

This area promotes investment in both green and grey infrastructure to enhance the availability and quality of water resources. With increasing droughts and seasonal variability, interventions such as artificial groundwater recharge, water reuse, and nature-based solutions like constructed wetlands play a vital role in buffering climate shocks, restoring ecosystems, and safeguarding water quality for domestic and productive uses.

Action 2.2.1: Promoting climate-smart rainwater harvesting and flood control infrastructure in households, institutions, and communities.

Action 2.2.2: Developing artificial groundwater recharge systems in areas with declining water tables.

Action 2.2.3: Promoting the safe reuse of treated wastewater for agriculture, landscaping, and other non-potable uses to alleviate pressure on freshwater sources.

Action 2.2.4: Expanding the use of nature-based solutions such as constructed wetlands for water treatment and pollution control, aligning with catchment restoration and ecosystem protection objectives

3. Catchment-based water resource Management and Climate Monitoring Systems integrated

This area focuses on embedding climate adaptation into catchment/watershed governance to enable data-informed decision-making and risk preparedness.

Action 2.3.1: Preparing or updating integrated catchment/watershed management plans that align with national climate adaptation strategies.

Action 2.3.2: Promoting collaboration and cooperation on transboundary catchment management through basin-wide dialogue and coordination mechanisms.

Action 2.3.3: Strengthening local and regional water governance structures to improve coordination and accountability among stakeholders.

Action 2.3.4: Installing early warning systems to monitor climate-related hazards such as floods, droughts, and landslides.

Action 2.3.5: Monitoring water availability and quality using climate-sensitive indicators to track ecosystem health and inform WASH service planning.

4. Long-term water resource monitoring systems implemented and maintained

This area focuses on long-term water resource monitoring to enable data-informed decision-making and risk preparedness.

Action 2.4.1 Installing early warning systems to monitor climate-related hazards.

Action 2.4.2 Monitoring water availability and quality

Action 2.4.3 Upgrading, maintaining and operating hydrological information systems

Action 2.4.4 Constructing and equipping the National Water Quality Reference Laboratory and related facilities

4.4.3 Outcome 3: Improved access to Climate-Smart WASH Infrastructure

Uganda's WASH infrastructure is increasingly vulnerable to the impacts of climate change, particularly in drought, landslide and flood-prone regions. Climate risks - such as prolonged dry spells, flash floods, and landslides - are causing significant disruptions to infrastructure functionality, service continuity, and public health. For example, around 42 per cent of shallow wells and 35 per cent of protected springs are in drought- prone areas, while 40 per cent of protected springs face flood risks. Rainwater harvesting systems, increasingly used to supplement water access, are vulnerable to damage from high temperatures, poor maintenance, and erratic rainfall. Meanwhile, water distribution systems are damaged by fluctuating water levels during droughts and floods, and motorized boreholes are often not equipped for energy efficiency or resilience to extreme events.

The sanitation infrastructure is equally vulnerable. More than 80 per cent of Ugandans rely on pit latrines, which are frequently inundated in low-lying and flood-prone areas, leading to faecal contamination and disease outbreaks. In institutions such as schools and health facilities, sanitation infrastructure is often not designed to withstand heavy rains or landslides, further exacerbating health risks during climate events.

To address these challenges, the WASH NAP proposes adaptation actions across three strategic infrastructure areas:

1. Climate-resilient water supply infrastructure and systems designed, developed and strengthened

This output focuses on upgrading and redesigning existing water supply infrastructure to ensure continuity of service under variable and extreme climate conditions. Actions target both efficiency and resilience.

Action 3.1.1: Redesigning climate-proof existing water supply systems to withstand droughts, floods, and landslides.

Action 3.1.2 Constructing rainwater harvesting systems at all levels (catchment, institution and household).

Action 3.1.3: Upgrading water distribution infrastructure to minimize losses due to leaks, high temperatures, and pressure shocks from fluctuating water levels.

Action 3.1.4: Promoting water-use efficient technologies across agriculture, industry, institutions, and households to reduce pressure on over-stretched supply systems.

Action 3.1.5: Motorizing high-yielding boreholes using solar or wind energy to enhance reliability and sustainability.

2. Water Storage for Climate Resilience protected and enhanced

With rainfall patterns becoming more erratic, storage systems are essential for ensuring availability during dry periods and for buffering flood impacts.

Action 3.2.1: Constructing and scaling multipurpose check dams and small reservoirs for storing excess water during wet seasons for use during dry spells.

Action 3.2.2: Constructing and maintaining large-scale multipurpose water reservoirs in strategic locations to support drought mitigation and water regulation.

3. Climate-resilient sanitation and wastewater management systems enhanced

This area focuses on adapting sanitation systems to withstand floods and landslides and reducing environmental pollution through decentralized and nature-based solutions.

Action 3.3.1: Constructing and upgrading inclusive and flood-resilient sanitation facilities in public spaces, institutions, and vulnerable communities.

Action 3.3.2: Promoting decentralized wastewater treatment systems to reduce pollution and increase resilience to climate shocks.

Action 3.3.3: Expanding the use of eco-friendly sanitation solutions such as bio-digesters to improve waste management and generate renewable energy.

Action 3.3.4: Promoting the use of climate-smart faecal sludge treatment systems in flood-prone and urbanizing areas.

Action 3.3.5: Promoting nature-based solutions such as constructed wetlands for water infiltration and pollution control

Action 3.3.6: Promoting the construction of eco-friendly sanitation systems such as biodigesters for energy and waste management, but also sanitation standards.

4.4.4 Outcome 4: Enhanced Climate-Resilient WASH service delivery

Ensuring climate-resilient WASH service delivery requires robust, responsive, and well-resourced service providers. In Uganda, public and private WASH institutions - especially at the local level - face mounting challenges in maintaining service continuity in the face of droughts, floods, and other climate hazards. Droughts often led to water rationing and reduced service reliability, while floods increase water treatment costs due to contamination and turbidity. Infrastructure damage caused by extreme events diverts limited resources toward emergency repairs, delaying long-term improvements and weakening the quality and equity of services. Furthermore, local WASH providers often lack adequate staffing, technical expertise, financial mechanisms, and monitoring systems to anticipate and respond to climate-related service disruptions.

Reliable service delivery also depends on well-functioning WASH markets and supply chains that ensure access to appropriate materials, technologies, and repair services. In many rural, remote, and underserved areas, limited availability of affordable WASH products undermines service continuity - particularly during or after climate shocks. Strengthening the ecosystem of service providers, suppliers, and innovators is therefore essential to improving the resilience and sustainability of WASH systems.

To address these bottlenecks, this result area prioritizes three key focus areas designed to strengthen institutional capacity, emergency preparedness, and local markets to support sustained and climate-resilient WASH service delivery.

1. Institutional capacity and systems for climate-resilient WASH service delivery strengthened

This area supports the institutional strengthening of WASH service providers, including public utilities, local governments, and private actors. Actions aim to improve technical capacity, planning and accountability systems, innovation, and data management to ensure responsive and inclusive service delivery under changing climate conditions.

Action 4.1.1: Developing and implementing training programmes for WASH service providers on climate-resilient WASH practices, with a focus on local governments and utilities.

Action 4.1.2: Establishing performance-based accountability frameworks to improve the efficiency and responsiveness of WASH institutions under climate stress.

Action 4.1.3: Enhancing WASH data collection and reporting systems to inform climate-risk-sensitive planning and budgeting.

Action 4.1.4: Creating community-based financing models for maintaining climate-resilient infrastructure, with attention to affordability and inclusion.

Action 4.1.5: Establishing monitoring and evaluation systems to track how climate risks affect service delivery, infrastructure, and user satisfaction.

Action 4.1.6: Supporting startups and entrepreneurs in developing and scaling innovative WASH solutions for climate adaptation.

Action 4.1.7: Creating community-based financing models for the maintenance of climate-resilient WASH infrastructure.

2. Emergency preparedness and response capacities strengthened.

This area focuses on equipping WASH institutions and service providers with the tools and systems required to prepare for and respond to climate-related emergencies. It includes contingency planning, capacity-building, and deployment of rapid response mechanisms to reduce service interruptions during extreme events.

Action 4.2.1: Developing and implementing emergency WASH response plans for climate-related disasters at national and district levels.

Action 4.2.2: Training WASH service providers and first responders on disaster preparedness and emergency WASH protocols.

Action 4.2.3: Establishing mobile WASH units that can be quickly deployed in affected areas to maintain essential services.

Action 4.2.4: Developing and maintaining rapid WASH infrastructure rehabilitation teams to restore service functionality after extreme events.

Action 4.2.5: Enhancing public awareness of hygiene behaviours and emergency preparedness to prevent disease outbreaks during climate-related emergencies.

4.4.5 Outcome 5: Improved Climate-Resilient WASH Practices in communities

Uganda's climate-resilient WASH strategy must empower users and communities to anticipate, respond to, and recover from climate-related disruptions. As frontline users of WASH services, households, schools, informal settlements, fishing villages/islands, refugee settlements and local institutions experience the most immediate impacts of water scarcity, flooding, and service interruptions. Vulnerable groups, particularly women, children, adolescents, disabled and the urban poor face disproportionate risks, including exposure to unsafe water, reduced access to sanitation, increased care burdens, and heightened vulnerability to disease and gender-based violence. During droughts and floods, households may be forced to rely on unimproved or expensive alternatives, undermining both health and financial stability.

Poor solid and liquid waste management in densely populated settlements, especially during floods, contributes to the spread of waterborne diseases. Climate-sensitive sanitation and hygiene practices remain underdeveloped, and community participation in WASH governance, early warning systems, and emergency preparedness remains limited.

To strengthen climate resilience at the community level, the WASH NAP identifies three priority areas and associated adaptation actions:

1. Climate-resilient sanitation and hygiene behaviors enhanced

This area supports the integration of climate risk into community-based sanitation and hygiene promotion efforts. Actions focus on raising awareness, behavior change, local innovation, and inclusive solutions for schools, informal and refugee settlements, and public institutions - particularly in flood- and drought- prone areas.

Action 5.1.1: Integrating climate risk awareness into sanitation and hygiene promotion approaches such as CLTS, market-based sanitation, and behavior change campaigns to create a demand for CR WASH services.

Action 5.1.2: Promoting climate-resilient sanitation solutions for vulnerable communities - including schools and informal settlements - and develop guidelines to disseminate best practices for integrating climate adaptation into sanitation and hygiene strategies.

Action 5.1.3: Developing and promoting climate-sensitive hygiene messages, including menstrual hygiene management and handwashing in water-scarce settings.

Action 5.1.4: Promoting the locally led low-cost production and uptake of affordable, climate-resilient sanitation materials, especially in remote or low-income settings.

Action 5.1.5: Promoting the use of water-efficient hygiene facilities (e.g., low-flow taps and handwashing stations) in drought-prone areas.

Action 5.1 6: Establishing and training community water source protection committees

Action 5.1.7: Integrating climate resilience into WASH-related school curricula and vocational training programmes to strengthen awareness, hygiene behaviors, and climate-smart skills at community and institutional levels.

2. Community Knowledge, attitudes and practices on climate- resilient hygiene enhanced

This area aims to strengthen household and community-level actions to conserve water and improve sanitary conditions to facilitate hand hygiene practice particularly in drought-affected or overexploited environments.

Action 5.2.1 Developing and promoting targeted messages and practices on hygiene interventions addressing climate-induced water scarcity challenges.

Action 5.2.2 Promoting the use of water-efficient handwashing facilities to conserve water in drought-prone areas.

Action 5.2.3 Advocating for the integration of climate-resilient hygiene component into school curricula.

Action 5.2.4 Promoting community participation in WASH governance structures to enhance accountability

Action 5.2.5 Developing and promoting menstrual hygiene management solutions adaptable to changing climate.

3. Community-Based Early Warning and Emergency Preparedness enhanced

This area focuses on building local systems and capacities for early warning, emergency response, and community-level preparedness for WASH-related climate hazards.

Action 5.3.1 Developing and operationalizing community-based early warning systems for WASH-related climate hazards.

Action 5.3.2: Training community members and leaders in emergency WASH response and recovery, especially in flood- and drought-prone areas.

Action 5.3.3: Facilitating participatory community climate risk vulnerability assessments and preparedness planning at the community level.

Action 5.3.4: Promoting transboundary and cross-community collaboration on WASH risk reduction in areas with mobile or border populations.

4. Local WASH Markets and Climate-Resilient Supply Chains strengthened

This output promotes the development of responsive WASH markets and supply chains capable of delivering climate-resilient technologies and services - especially in rural and underserved areas. The challenge around this output is well known, as there is a little market with affordable sanitary products. There is a need to develop products that are of quality meeting the user's needs and affordability. In addition, the market access is important for the consumers.

Action 5.4.1: Support development of resilient supply chain for sanitary and water supply products

Action 5.4.2: Supporting local enterprises and market actors to expand the supply and distribution of climate-resilient WASH technologies and services, with a focus on underserved and climate-vulnerable areas.

WASH NAP Budget and Costing

To implement and operationalize the above prioritized WASH adaptation actions, a budget amounting to UGX 993,225,000,000 was developed costing each of the activities under each of the five outcome areas contributing to Climate Resilient WASH. The budget was developed in consultation with development partners and sector experts in the building of enabling environments, catchment management interventions, development of climate resilient WASH infrastructure, building of climate smart service delivery systems and development of climate-adaptive behaviors for resilient communities in the Ministry of Water and Environment, Ministry of Health and CSOs.

Costing Rational

Climate-Resilient Enabling Environment:

- Estimate of activities related to strengthening governance and policy process for WASH includes development of potential guidelines, regulatory frameworks and standards. This includes costs related to engagement of consultants, stakeholder consultations, and workshops
- Recent costs of training curriculum development and workshop for both the orientation/skill development of line ministries and district leadership are used to estimate the financial needs for capacity development and knowledge management on climate resilient WASH

Management and Monitoring of Water Resources and Ecosystems:

- Cost of activities to protect water resources and ecosystems such as reforestation and afforestation of watershed and catchments is informed by the catchment needs and vegetation cover loss in Uganda in the four major water management zones.
- Both Uganda National Metrological Department and the Directorate for Water Resources supported the cost estimate for developing water quality and hydrological information systems and early warning systems, based on their earlier experience.

Climate-Smart WASH Infrastructure:

- This includes the cost of improvement of climate smart water supply infrastructure such as the cost of upgrading existing water supply infrastructure to enhance their capacity to withstand extreme weather events, minimizing losses and inefficiencies. This is calculated based on the additional capital expenditure (CapEx) and operations expenditures (OpEx) required for utility operators such as NWSC and Umbrella Water
- Additional cost needed to make the existing sanitation infrastructure climate resilient – includes the extra cost needed to provide additional elevation to plinth, and/or supportive landscaping to prevent entry of floods water

Climate-Resilient WASH Service Delivery:

- The cost includes enhancement of climate resilient services through training and skill building of WASH service providers. Other system strengthening interventions include, establishment of performance-based accountability frameworks, and development of community-based financing for the maintenance of climate resilient WASH infrastructure. Costs were referenced from similar service provider engagements and triggering interventions in the WASH space such as CBMS+ and MBS approaches.
- The cost estimate for improving emergency response capabilities of service providers was developed referring to recent response actions such as the positioning of IPC supplies and development of climate related disaster response plans and in climatic emergencies such as the floods, droughts, and landslides.

Promotion of Climate-Resilient WASH Practices:

- The cost of community mobilization and behavioral campaigns establish positive social norms with improved knowledge attitudes and practices on climate resilience WASH are based on the experience from multiple approaches used in the country such as CLTS, SLTS and MBSIA.
- Cost estimate for strengthening local markets with improved supply chain – including climate

resilient WASH products and services is informed by the need to formulate robust logistical routes increasing availability of WASH products regardless of the climatic hazards.

WASH NAP is expected to serve as a guide to mobilize resources including from multiple climate funds, bilateral donors, and international financial institutions. A detailed activity breakdown of the budget is presented in Annex 1 to 5.

Table 11: Table provides costing at output level: details in the Annex

Outcome, Output	Cost (UGX)
Grand Total	**993,225,000,000**
Outcome 1: Climate-Resilient Enabling Environment is enhanced	**20,975,000,000**
Output 1.1: Governance and Policy on climate-resilience WASH strengthened at all levels (Transboundary, national, catchment, micro-watersheds, district and sub county)	9,950,000,000
Output 1.2: Finance and resource mobilization strengthened	2,025,000,000
Output 1.3: Capacity and knowledge management enhanced at all levels	4,750,000,000
Output 1.4: Climate-smart WASH technology and innovations promoted	3,500,000,000
Output 1.5: Stakeholder Coordination Strengthened	750,000,000
Outcome 2. Water Resources and Ecosystems are monitored and managed to withstand climate risks	**140,750,000,000**
Output 2.1: Water resources (aquifers and watersheds) protected	76,750,000,000
Output 2.2: Water resources' infrastructure established	14,500,000,000
Output 2.3: Catchment-based water resource management strengthened	16,300,000,000
Output 2.4 Long-term monitoring systems implemented and maintained	33,200,000,000
Outcome 3. Access to Climate-Smart WASH Infrastructure is Improved	**749,300,000,000**
Output 3.1: Climate-smart water supply infrastructure designed, developed, and maintained	274,750,000,000
Output 3.2: Water storage enhanced and protected	435,000,000,000
Output 3.3: Climate-resilient sanitation infrastructure designed, developed, and maintained	39,550,000,000
Outcome 4. Services for Climate-Resilient WASH are Enhanced	**43,000,000,000**
Output 4.1: Capacity of public and private institutions responsible for WASH service delivery strengthened	8,700,000,000
Output 4.2: Emergency response capacity for WASH service providers enhanced	34,300,000,000
Outcome 5. Community Climate-Resilient WASH Practices are Improved	**39,200,000,000**
Output 5.1 Community knowledge and attitudes on climate-resilient sanitation practices enhanced	16,950,000,000
Output 5.2 Community knowledge and attitudes on climate-resilient hygiene practices enhanced	9,800,000,000
Output 5.3 Community-based climate-risk early warning systems enhanced	10,650,000,000
Output 5.4 Local markets and supply chains extended and deepened to increase availability of climate resilient WASH products and services	1,800,000,000

CHAPTER
05

IMPLEMENTATION FRAMEWORK

5.1 WASH NAP Implementation

The Implementation Plan provides a detailed breakdown of all priority adaptation actions outlined in the WASH National Adaptation Plan. Building on the previous section, which introduced the actions under each Result Area. The Plan serves as a practical roadmap to operationalize climate-resilient WASH interventions across Uganda, aligning resources, stakeholders, and targets to achieve measurable impact.

Table 12: WASH-NAP Implementation Plan

Outcome, output and Activities	2026	2027	2028	2029	2030	Responsibility
OUTCOME 1: CLIMATE-RESILIENT ENABLING ENVIRONMENT IS ENHANCED						
Output 1.1: Regulatory Framework for climate-resilience WASH strengthened at all levels (Transboundary, national, catchment, district and sub county)						
1.1.1 Developing and disseminating climate-resilient WASH guidelines, regulatory frameworks, WASH building codes, and standards.	x	x				MWE, NEMA, Local Gov'ts, CSOs
1.1.2 Integrating climate risk assessments into local WASH planning and decision-making.	x	x				MWE, Local Gov'ts, CSOs
1.1.3 Promoting adherence to water-use permit conditions.			x	x	x	MWE, NEMA, CSOs
1.1.4 Developing contingency plans for emergency WASH responses to climate-related mobility.	x	x				MWE, OPM, Local Gov'ts, CSOs
1.1.5 Strengthening policies to prevent encroachment on wetlands and critical water catchment areas.	x	x				MWE, NEMA, CSOs
1.1.6 Training entities to establish and implement environmental and social safeguards.	x	x				MWE, MoH, CSOs
1.1.7 Enhancing monitoring and reporting mechanisms for tracking climate-sensitive WASH outcomes.	x	x				MWE, MoH, CSOs
Output 1.2: Finance and resource mobilization strengthened						
1.2.1 Advocating for establishment of a climate fund, infrastructure bonds, and increased national budget allocation for climate adaptation.	x	x				MoFPED, MWE, MAAIF, CSOs
1.2.2 Establishing and strengthening public-private partnerships (PPPs) for sustainable WASH investment.	x	x				MWE, CSOs
1.2.3 Developing performance-based financial incentives for climate-resilient WASH service providers.			x	x	x	MoFPED, CSOs
1.2.4 Developing bankable project proposals for climate-resilient WASH financing.	x	x				MWE, CSOs
Output 1.3: Capacity and knowledge management enhanced at all levels						
1.3.1 Training WASH stakeholders on climate-resilient WASH.	x	x				MWE, MoH, MoES, CSOs
1.3.2 Developing digital knowledge platforms to share climate adaptation lessons in the WASH sector.	x	x				MWE, ICT Ministry, MoES
1.3.3 Establishing research partnerships between universities, governments, and CSOs to study climate impacts on WASH.	x	x				MWE, MoES, CSOs
1.3.4 Training WASH professionals on nature-based solutions and climate-smart water management.	x	x				MoES, MWE, CSOs
1.3.5 Conducting periodic knowledge-sharing on climate resilience in WASH for service providers and institutions.	x	x	x	x	x	MWE, MoES, CSOs
1.3.6 Advocating for integration of climate adaptation into the curriculum of WASH-related academic and vocational training programs.			x	x	x	MoES, MoES, CSOs
1.3.7 Engaging local influencers and media to promote hygiene behaviors under climate stress.	x	x	x	x	x	MoH, Media, CSOs

Outcome, output and Activities	2026	2027	2028	2029	2030	Responsibility
Output 1.4: Climate-smart WASH technology and innovations promoted						
1.4.1. Developing/promoting climate-smart WASH management systems.	x					MWE, Private Sector, CSOs
1.4.2 Supporting the research and development of innovative sanitation solutions.	x	x	x	x	x	MoES, Private Sector, CSOs
1.4.3 Integrating climate resilience data in the Water and Environment Information System (WEIS).	x	x	x	x	x	MWE, UBOS
1.4.4 Promoting water-use efficient technologies in agriculture, industry, institutions, and households.	x	x	x	x	x	MWE, Private Sector, MoH
Output 1.5: Stakeholder Coordination Strengthened						
1.5.1 Establishing national multi-stakeholder WASH secretariat.	x					MWE, CSOs, Dev't Partners
1.5.2 Establishing a sub-national multi-stakeholder WASH technical working groups	x					MWE, CSOs, Dev't Partners, WMZ
1.5.3 Establishing community WASH feedback platform.	x					MWE, CSOs, Dev't Partners, DLGs
OUTCOME 2. WATER RESOURCES AND ECOSYSTEMS ARE MONITORED AND MANAGED TO WITHSTAND CLIMATE RISKS						
Output 2.1: Water resources (aquifers and watersheds) protected						
2.1.1 Demarcating and restoring degraded buffer zones of wetlands, rivers, and lakes	x	x	x	x	x	MWE, NEMA, LGs
2.1.2 Mapping and gazetting groundwater recharge areas.			x	x	x	MWE
2.1.3 Establishing soil and water conservation practices.	x	x	x	x	x	MAAIF, MWE, WWF, CSOs
2.1.4 Implementing reforestation and afforestation projects around watersheds and aquifers to enhance water retention.	x	x	x	x	x	MWE, LGs UWA
2.1.5 Strengthening water resources assessments and monitoring.	x	x	x	x	x	DWRM, NWSC, UBOS
Output 2.2: Water resources' infrastructure established						
2.2.1 Promoting rainwater harvesting and flood control structures.	x	x	x	x	x	MWE, LGs, Private Sector
2.2.2 Developing artificial groundwater recharge.			x	x	x	MWE
2.2.3 Promoting water reuse.	x	x	x	x	x	MWE, NWSC, UIRI
Output 2.3: Catchment-based water resource management strengthened						
2.3.1 Preparing/updating integrated catchment management plans that align with climate adaptation strategies.	x	x	x	x	x	MWE, Local Governments, CSOs
2.3.2 Promoting collaboration on transboundary catchment management.	x	x	x	x	x	Nile Basin Initiative, EAC, MWE
2.3.3 Establishing and strengthening catchment-based water governance structures by enhancing coordination among stakeholders.	x	x	x	x	x	MWE, Local Governments, CSOs
2.3.4 Installing early warning systems to monitor climate-related hazards.	x	x	x	x	x	MWE, OPM, CSOs

Outcome, output and Activities	2026	2027	2028	2029	2030	Responsibility
Output 2.4 Long-term monitoring systems implemented and maintained						
2.4.1 Installing early warning systems to monitor climate-related hazards.	x	x	x	x		MWE
2.4.2 Monitoring water availability and quality	x	x	x			MWE
2.4.3 Upgrading, maintaining and operating hydrological information systems	x	x	x			MWE
2.4.4 Constructing and equipping the National Water Quality Reference Laboratory and related facilities	x	x	x			MWE
OUTCOME 3. ACCESS TO CLIMATE-SMART WASH INFRASTRUCTURE IS IMPROVED						
Output 3.1: Climate-smart water supply infrastructure designed, developed, and maintained						
3.1.1 Redesigning existing water supply systems to withstand climate hazards.	x	x				MWE, NWSC, LGs
3.1.2 Constructing rainwater harvesting systems at all levels (catchment, institution and household).	x	x	x	x	x	MWE, CSOs, LGs
3.1.3 Upgrading existing water distribution infrastructure to minimize losses through leaks and inefficiencies	x	x	x	x	x	MWE, NWSC, LGs
3.1.4 Motorizing high-yielding boreholes using clean energy (wind & solar).	x	x	x	x	x	MEMD, MWE
3.1.5 Promoting water-use efficient technologies in agriculture, industry, institutions, and households.	x	x	x	x	x	MAAIF, MWE
Output 3.2: Water storage enhanced and protected						
3.2.1 Developing and maintain multipurpose reservoirs for storing excess water during wet seasons for use during dry spells.	x	x	x	x	x	MWE, NWSC
3.2.2 Constructing large-scale multi-purpose water reservoirs.	x	x	x	x	x	MWE, MAAIF,
Output 3.3: Climate-resilient sanitation infrastructure designed, developed, and maintained						
3.3.1 Constructing/upgrading inclusive sanitation facilities to withstand climate hazards in institutions and public places prone to climate hazards.	x	x	x	x	x	MoH, MWE, Local Governments
3.3.2 Promoting decentralized wastewater treatment systems to reduce pollution and improve resilience.	x	x	x	x	x	NWSC, MWE
3.3.3 Upgrading institutional/public sanitation infrastructure in vulnerable communities.	x	x	x	x	x	MoH, MoES, CSOs
3.3.4 Promoting the use of climate-smart wastewater and faecal sludge treatment systems.	x	x	x	x	x	NWSC, MWE
3.3.5 Promoting nature-based solutions, such as constructed wetlands, for water filtration and pollution control.	x	x	x	x	x	NEMA, CSOs, MWE
3.3.6 Promoting the construction of eco-friendly sanitation systems, such as bio-digesters, for energy and waste management.	x	x	x	x	x	MEMD, MWE

Outcome, output and Activities	2026	2027	2028	2029	2030	Responsibility
OUTCOME 4. SERVICES FOR CLIMATE-RESILIENT WASH ARE ENHANCED						
Output 4.1: Capacity of public and private institutions responsible for WASH service delivery strengthened						
4.1.1 Developing and implementing training programs for WASH service providers on climate-resilient WASH practices.	x	x				MWE, CSOs, MoES
4.1.2 Establishing performance-based accountability frameworks for WASH institutions to improve service efficiency.	x	x				Ministry of Public Service, MWE
4.1.3 Enhancing data collection and reporting systems for WASH institutions to improve evidence-based decision-making.	x	x				UBOS, MWE, Local Governments
4.1.4 Developing community-based financing models for the maintenance of climate-resilient WASH infrastructure.	x	x				Microfinance Support Centre, CSOs, Development Partners
4.1.5 Establishing monitoring and evaluation (M&E) systems to track climate impacts on WASH service delivery.	x	x	x			MWE, CSOs, MoES
4.1.6 Supporting startups and entrepreneurs in developing innovative WASH solutions for climate adaptation.				x	x	UIA, PSFU, CSOs
4.1.7 Creating community-based financing models for the maintenance of climate-resilient WASH infrastructure.	x	x				Microfinance Support Centre, CSOs, Development Partners
Output 4.2: Emergency response capacity for WASH service providers enhanced						
4.2.1 Developing and implementing emergency WASH response plans for climate-related disasters.	x	x				OPM, Uganda Red Cross, CSOs, MoH
4.2.2 Training WASH service providers on emergency response protocols and disaster preparedness.	x	x				MWE, CSOs, MoES
4.2.3 Enhancing public awareness of emergency hygiene measures to prevent disease outbreaks during disasters.	x	x				OPM, Uganda Red Cross, MoH
OUTCOME 5. COMMUNITY CLIMATE-RESILIENT WASH PRACTICES ARE IMPROVED						
Output 5.1 Community knowledge and attitudes on climate-resilient sanitation practices enhanced						
5.1.1 Integrating climate risk awareness into sanitation approaches (Community-Led Total Sanitation, Market-based Sanitation, Incentives, behavioural change campaigns, etc).	x	x				MWE, CSOs, MoH
5.1.2 Promoting climate-proof sanitation interventions for vulnerable communities.	x	x	x			MoH, CSOs, LGs
5.1.3 Developing guidelines for integrating climate adaptation into sanitation promotion approaches.	x	x				MWE, MoES
5.1 4 Promoting locally-led low-cost production of climate-resilient sanitation materials.	x	x				MWE, MTIC, USSIA, UNBS, Private Sector & SMEs, LGs, CSOs

Outcome, output and Activities	2026	2027	2028	2029	2030	Responsibility
5.1.5 Implementing water conservation awareness programs for efficient water use in households and industries.	x	x	x	x		MWE, LGs, CSOs
5.1 6 Establishing and training community water source protection committees	x	x				Local Gov'ts, CSOs
5.1.7 Supporting schools in implementing climate-adaptive sanitation solutions to enhance health and hygiene.	x	x	x	x	x	MoES, CSOs
Output 5.2 Community knowledge and attitudes on climate-resilient hygiene practices enhanced						
5.2.1 Developing and promoting targeted messages and practices on hygiene interventions addressing climate-induced water scarcity challenges.	x	x	x			MoH, MWE UNBS, CSOs, LGs
5.2.2 Promoting the use of water-efficient handwashing facilities to conserve water in drought-prone areas.	x	x	x	x	x	MWE, MoH, MoES, Private Sector & CSOs, LGs
5.2.3 Advocating for the integration of climate-resilient hygiene component into school curricula.	x	x	x	x	x	MoES, NCDC, MWE, MoH, CSOs
5.2.4 Promoting community participation in WASH governance structures to enhance accountability	x	x	x	x	x	MWE, LGs, CSOs, MGLSD
5.2.5 Developing and promoting menstrual hygiene management solutions adaptable to changing climate.	x	x	x	x	x	MoH, MWE, MoES, UNBS, CSOs, Private Sector, CSOs
Output 5.3 Community-based climate-risk early warning systems enhanced						
5.3.1 Developing and promoting early warning systems for WASH-related climate hazards.	x	x	x	x	x	MWE, URCS, LGs CSOs
5.3.2 Training local communities on emergency WASH response and recovery protocols.		x	x			MoH, MWE, Local Governments, Uganda Red Cross, CSOs,
5.3.3 Promoting community-based climate-risk vulnerability assessments.	x	x	x	x	x	CSOs & Private Sector
5.3.4 Promoting collaboration on transboundary WASH risk reduction measures.			x	x	x	MWE, Basin Organizations, EAC, UNEP, CSOs
Output 5.4 Local markets and supply chains extended and deepened to increase availability of climate resilient WASH products and services						
5.4.1 Support development of resilient supply chain for sanitary and water supply products	x	x	x	x	x	MWE, Private Sector,
5.4.2 Supporting local enterprises and market actors to expand the supply and distribution of climate-resilient WASH technologies and services	x	x	x	x	x	MWE, Private Sector

5.2 WASH-NAP Coordination Arrangement

To support and enhance effective implementation of the WASH NAP, it is pertinent that a strong coordination framework is instituted to ensure harmonized implementation of activities, flow of information, knowledge and financial resources.

MWE is the lead agency responsible for implementing the WASH-NAP. A taskforce chaired by relevant departments within the MWE comprising of technical representatives, UN agencies, CSOs, other development partners and private enterprises supporting the water and environment sector will be established.

The major role will be to oversee and coordinate the implementation of the WASH-NAP. The coordination responsibilities will include advocacy, resource mobilization, documentation, monitoring and evaluation, and reporting. The taskforce will report to the Permanent Secretary.

The taskforce will receive strategic guidance from the water and environment committees, and the national advisory climate change committees. At subnational level, the taskforce will be informed by all relevant committees including District Water and Sanitation Committees, District Disaster Management Committees, and Catchment Management Committees. The implementation of WASH-NAP will follow the program-based approach through the relevant departments at subcounty, parish and community levels.

To strengthen the WASH NAP coordination arrangement, UWASNET and its governance structure which includes Regional Coordinators and Thematic Working Groups offers an opportunity to oversee the implementation of adaptation actions and, therefore, their role is significant in the implementation of actions.

5.3 Financial Mobilization Strategy and Sources

5.3.1 Financial Mobilization Strategies

Climate-resilient WASH services in Uganda require predictable, diversified, and sustainable financing. Yet current resource flows remain fragmented, insufficient, and heavily donor dependent. National budgets provide some support, but climate risks are often not systematically integrated into financial planning. Meanwhile, private investment in Climate resilient WASH remains limited due to perceived risks, regulatory uncertainty, and underdeveloped mechanisms for attracting climate finance.

This WASH-NAP proposes five strategic actions to strengthen resource mobilization, aligned with national climate and development frameworks. These strategies operationalize Result Area 1, Output 4: Strengthening Finance and Resource Mobilization, and are essential to unlocking domestic, international, and private resources to fund climate-resilient WASH investments.

Strategic Action 1:
Establish a Dedicated Climate Financing Framework for WASH.

A dedicated financing architecture is needed to channel public and climate funds effectively. Uganda should establish a national WASH Climate Adaptation Fund, with transparent access mechanisms at national and sub-national levels. This should be supported by integrating climate-resilient WASH into sector finance plans, annual budgets, and planning instruments. Key measures include:

- **Mainstreaming climate-resilient WASH targets** in national and local plans and budgets.
- Developing **climate-resilient WASH finance plans** that prioritize investments and funding sources aligned with SDG 6.
- Establishing a **Climate Resilient WASH Fund**, with clear governance and disbursement mechanisms.

- Developing **bankable project proposals** targeting global climate funds (e.g., GCF, GEF, etc.).
- Strengthening **sector-level budget planning** to direct public subsidies toward underserved areas and high-risk WASH investments.
- Mobilizing funding through **climate infrastructure bonds** and other blended finance instruments.

Strategic Action 2:
Promote Public-Private Partnerships to strengthen Market-Based Instruments.

To diversify funding and de-risk investments, Uganda should expand PPP frameworks and financial instruments that attract private sector participation in WASH. Credit guarantee schemes, performance-based financing, and support for innovative business models can help scale climate-smart solutions. Key measures include:

- Enhancing **PPP frameworks** to increase private investment in WASH infrastructure and services.
- Establishing **credit guarantee schemes** to support SMEs and utilities investing in climate-resilient WASH technologies.
- Supporting **private sector business planning** and investment readiness for innovative WASH products.
- Piloting and scaling **performance-based financing** to reward efficiency and equity improvements among service providers.

Strategic Action 3:
Optimize Revenue Generation and Tariff Regulation.

Tariff revenues are a critical source of sustainable financing but are often poorly structured. Uganda should strengthen regulatory frameworks for tariff-setting to ensure cost recovery meeting to equity and affordability. Reforms should limit political interference, adjust tariffs for inflation, and ensure affordability for vulnerable groups. Key measures include:

- Establishing a **transparent, inflation-indexed tariff-setting framework**, focused on cost recovery and equity, at least aiming to recover the cost of operation and maintenance.
- Strengthening **regulatory oversight** to improve affordability, service quality, and financial sustainability.
- Expanding **performance-based funding** to improve operational efficiency and resilience among service providers.

Strategic Action 4:
Build Institutional Capacity for Resource Mobilization.

Institutions at all levels need stronger capacity to develop climate resilient proposals, manage, and account for WASH financing. Strengthening investment cases for climate resilient WASH, proposal development, expenditure tracking, and public financial management are key to improving transparency and investor confidence. Key measures include:

- Training government agencies, CSOs, and private actors in **climate finance proposal development and tracking**.
- Supporting **credit rating systems and accountability benchmarks** for WASH service providers and local authorities.
- Improving **financial planning capacity** for climate-resilient WASH at central and local government levels.
- Encouraging **long-term loan restructuring** to support scalable, growth-oriented climate-resilient WASH initiatives.

Strategic Action 5:
Enable Community management of WASH services with supportive Financing Mechanisms.

Civil society and community organizations have a critical role in mobilizing and managing resources for local-level WASH investments. Strengthening their financial sustainability and engagement in public budgeting can improve service equity and climate resilience. Key measures include:

- Supporting CSOs and CBOs to diversify funding sources, including foundation grants, community fundraising, microloans and income-generating initiatives.
- Encouraging community involvement in budgeting and co-financing arrangements to build ownership and accountability.
- Enhancing CSO and CBO partnerships with government, donors, and local financial institutions to close financing gaps and extend service coverage.

5.3.2 Potential Sources of Funding

Achieving the financial mobilization strategies outlined above requires tapping into a wide range of funding sources. Uganda's climate-resilient WASH agenda cannot rely on a single financing stream; rather, it must draw on a mix of domestic public resources, international climate and development finance, private sector investment, philanthropic contributions, and community-based mechanisms. Figure 36 below summarizes the key potential funding sources that can be leveraged to support implementation of the WASH-NAP, building a diversified and sustainable financing base for long-term resilience.

Figure 36: *Potential sources of funding*

Government funding remains a central pillar, through both national and sub-national budget allocation. These public resources are critical for sustaining basic services delivery and for leveraging additional finance. International donors and development partners, including multilateral UN agencies such as UNDP and UNICEF, international financial institutions (IFIs) such as the World Bank, AfDB, and multiple bilateral donors provide technical and financial support for large-scale projects and sector reforms. International financial institutions such as the IMF and the African Development Bank also offer grants and loans to support infrastructure, resilience, and policy reforms.

Multilateral climate funds (MCFs) serving the UNFCCC and Paris Agreement such as Adaptation Fund(AF) which funds projects that help communities get ready for climate change impacts, Green Climate Fund (GCF) which helps developing countries lower their pollution & adapt to climate change, Loss & Damage Fund (L&D Fund) which funds vulnerable countries cope with often irreversible, unavoidable and unrepairable climate impacts (that cannot be managed through adaptation), Least Developed Countries Fund (LDCF) funds least developed countries to help them cope with climate change and Special Climate Change Fund (SCCF)which supports projects that deal with climate change in many ways, e.g. new technology, play a key role in capacity building, researching, piloting, demonstrating new approaches and technologies to access climate finance.

Philanthropic organizations and foundations, such as the Gates Foundation, contribute to innovation and equity-focused interventions, particularly in underserved communities. Civil Society Organizations mobilize grassroots-level funding and play a vital role in implementing and sustaining community-based initiatives. The private sector, through public-private partnerships, corporate social responsibility (CSR), and social enterprises, can unlock investment in climate-smart infrastructure and service delivery. Finally, innovative financing mechanisms such as climate bonds, blended finance, and microfinance schemes offer new opportunities to close the investment gap, especially in areas where traditional financing falls short.

Together, these sources, if well-coordinated—can help close the climate adaptation financing gap in the WASH sector, improve long-term sustainability, and ensure no one is left behind.

5.4 Advocacy for Climate Change Adaptation in the WASH sector

Climate-resilient WASH is the backbone of resilience of children and communities and informs education, development, health outcomes. Because it has not been a national priority, no evidence on impacts or efficacy of climate resilient WASH solutions, therefore no resources, no investment case, no capacity, no solutions, no demand therefore this calls for increased advocacy.

Uganda has developed several policies, frameworks and strategies on climate change highlighting climate change adaptation and mitigation strategies. Examples of these policies include the Climate Change Policy 2015, the Climate Change Act 2021, National Determined Contribution, etc. However, the integration of WASH and enforcement of compliance in these plans, budgets and regulations by Ministries, Departments, Agencies and Local Governments has been limited.

Combating climate change in WASH service delivery requires stakeholders to advocate for and adopt community-based/locally led adaptation strategies. Such an approach emphasizes empowering local stakeholders/ communities that bear the brunt of climate change to have a strong voice in the design of adaptation strategies.

Implementation of WASH adaptation strategies/interventions requires advocacy for sustainable investments in adaptation interventions such as sustainable water harvesting, catchment conservation interventions in upper, mid, and downstream areas; water quality analysis and surveillance; water safety planning for water quality management; groundwater monitoring; and sanitation improvement campaigns in households and public institutions to overcome faecal contamination in surface and groundwater at the times of emergencies such as floods (Kanweri et al., 2022).

Effective advocacy for WASH adaptation continues to be hampered by barriers such as poor coordination among state and non-state actors; limited involvement of the communities in policy formulation, implementation and monitoring; inadequate capacity in climate adaptation; and limited access to international climate finance and inadequate domestic financing due to the shrinking fiscal space. Hence, advocacy towards addressing the above barriers will strengthen Uganda's response towards climate change adaptation in WASH.

5.5 WASH-NAP Communication Strategy

A good and flexible communication strategy is highly associated with improved knowledge and behaviors related to WASH. Communication is an integral part of the organizational process as the flow of communication up and down the organizational hierarchy has its effects on efficiency, decision making and morale of organizations. A communication strategy guides an entire program or intervention. It sets the tone and direction so that all communication activities, products and materials work in harmony to achieve the desired change. Strategic activities and materials are more likely to promote change. A communication strategy also enables stakeholders and partners to provide input and agree upon the best way forward so that actions are unified.

Situational Analysis: The WASH-NAP communication strategy is guided by the actions and principles as stipulated in the Uganda National Climate Change Communications Strategy (2017/21) and Communication Education Participation and Awareness (CEPA) Strategy under the Ministry of Water and Environment (MWE). These aim to effectively increase and improve the level of awareness, interest, positive attitudes, behaviors and practices towards climate resilient WASH adaptation and mitigation among the public, and vulnerable communities in Uganda.

Communication within the WASH sector is undertaken at two levels; internal communication (use of circulars, notice boards, website, workshops, sanitation awareness weeks, flyers, posters, print press articles and toll-free lines) and external communication (emails, letters, media center briefings, website, toll free lines, social media, radio, outreach campaigns, seminars, policy briefs and television). Politically, the Minister is the head of the Ministry and is responsible for communicating the Ministry/Sector policies, programmes and projects. Administratively, the Permanent Secretary is the Chief Executive Officer of the Ministry, who is mandated to communicate.

However, for effective communication at subnational and local community levels, the modes of communication that should be used to rely on climate resilient WASH adaptation actions are print materials, phone texts, phone call, radio, television, audio-visual CD, word of mouth (one-on-one), community meetings and dialogues, websites, social media, computer based (offline), mixed channels and others. Though, the most preferred platforms are radio; word of mouth and community meetings compared to television, print materials, SMS, phone, and social media.

Implementation Plan: To sustain this strategy, there is a need to ensure or commit sustainable budgetary allocations to the communication initiatives within the sector, which is key in relating to internal and external stakeholders. In addition, these funds should be used to strengthen the public relations office and procurement/maintenance of information and technology facilities. This will facilitate timely and effective feedback from the stakeholders.

Feedback: This plan agitates the documentation or compilation of feedback from the different stake- holders since communication is a two-way process rooted in the principles of ownership, participation and voice. Therefore, there is a need to know what the stakeholders' opinions are on the value, relevancy, timeliness, appropriateness, and correctness of the information disseminated and possibly the channels used.

5.6 Entry Points of the WASH-NAP

The development of the WASH-NAP is timely and has many entry levels to make long-lasting impacts on the communities, environment and economy. These points vary from government, subnational, watershed and local levels:

At the national level, the level exists during the development of WASH national and sectoral strategies, programmes, budgets and workplans; National Development Plans; National Biodiversity Strategy Action Plans, development of transboundary water resources management strategies and Nationally Determination Contribution; compilation of national standards and guidelines related to strengthening climate resilient WASH and during annual sectoral performance reporting.

At the Sub national level, the potential entry level includes during the development of district development plans, District contingency plans and District multi hazard risk and vulnerability profiles.

While at Catchment level, the opportunities exist in the course of developing catchment/micro watershed management plans and development water source protection plans, while at the local level, the entry points are available during the development of guidelines in strengthening the Community Health Extension Workers, review and designing of Community-Led Total Sanitation (CLTS) guidelines and integration of climate resilient WASH actions in the formation and training of members of water user committees, parish climate change committees, parish climate change committees and local council committees.

5.7 Areas of Complementarity with the Health and Agricultural NAPs

The intersection between the Health NAP and WASH-NAP appears in strengthening safer water and sanitation facilities with the aim to prevent waterborne diseases and promoting hygiene behaviours that are essential for infection prevention. While with the Agriculture NAP, an emphasis has been made in improving the resilience of water resources and ecosystems for which farming heavily dependents on water availability - irrigation and livestock water needs. Agricultural runoff is a source of water pollution which impacts community WASH and therefore, having resilient WASH services will lead to an improved reduction of health risks rendering the communities to enhance more agricultural potential through provision of labour and monitoring of yield.

5.8 Anticipated Risks and Management

The risks envisaged in the planning and implementation of WASH related adaptation options and the strategies to mitigate them are demonstrated in Table 22 below:

Table 13: Anticipated risks and management

Anticipated risks and Management	Risk Management
Risk: Increased frequency and intensity of extreme weather events such as floods, droughts, and storms can disrupt WASH infrastructure and services. **Impact:** Damage to water supply systems, sanitation facilities, and increased contamination of water sources.	Design and construct WASH infrastructure to withstand extreme weather events, such as floods and droughts. Implement and enhance early warning systems to provide timely information on extreme weather events. Develop and regularly update emergency response plans to ensure rapid and effective action during climate-related disasters.
Risk: Insufficient funding and financial resources to implement and sustain WASH adaptation measures. **Impact:** Delayed or incomplete implementation of projects, reduced capacity to maintain and upgrade infrastructure, and limited ability to respond to emergencies.	Mobilize funding from a variety of sources, including national budgets, international donors, and private sector investments. Encourage public-private partnerships to leverage resources and expertise for WASH projects. Explore innovative financing options, such as climate bonds and microfinance to support WASH adaptation measures.
Risk: Weak institutional capacity, lack of coordination among stakeholders, and inadequate governance structures. **Impact:** Inefficient implementation of adaptation measures, duplication of efforts, and gaps in service delivery.	Strengthen capacity of institutions and individuals involved in WASH management through training and technical assistance. Enhance coordination among government agencies, CSOs, and other stakeholders to ensure efficient implementation of adaptation measures. Develop and enforce policies and regulations that support climate-resilient WASH practices.

Anticipated risks and Management	Risk Management
Risk: Low levels of community awareness and engagement in WASH adaptation initiatives. **Impact:** Resistance to change, lack of ownership, and unsustainable practices that undermine adaptation efforts.	Engage communities in the planning and implementation of WASH projects to ensure local ownership and sustainability, conduct education and awareness campaigns to inform communities about the importance of WASH and climate resilience, implement behavior change programs to encourage sustainable WASH practices.
Risk: Limited access to and adoption of innovative WASH technologies and resilient infrastructure. **Impact:** Inability to effectively address climate impacts, reduced efficiency in water and sanitation services, and increased vulnerability to climate change.	Promote the adoption of innovative WASH technologies that enhance resilience to climate impacts, invest in upgrading existing WASH infrastructure to improve efficiency and resilience. Support research and development to identify and implement new technologies and practices for climate- resilient WASH services.
Risk: Ongoing environmental degradation, including deforestation, wetland encroachment, and pollution. **Impact:** Reduced natural resilience of ecosystems, compromised water quality, and increased risk of waterborne diseases.	Implement ecosystem restoration projects, such as wetland restoration and afforestation, to enhance natural resilience, enforce pollution control measures to reduce contamination of water sources, promote sustainable land use practices to protect water catchments and reduce soil erosion.
Risk: Inadequate policies and regulations to support climate-resilient WASH practices. **Impact:** Lack of enforcement, non-compliance with standards, and limited support for adaptation initiatives.	Develop comprehensive policies that address climate resilience in the WASH sector, Strengthen the enforcement of existing regulations to ensure compliance with WASH standards. Involve stakeholders in the policy development process to ensure that policies are inclusive and effective.
Risk: Rapid population growth and urbanization leading to increased demand for WASH services. **Impact:** Strain on existing infrastructure, over-extraction of water resources, and challenges in providing equitable access to services.	Integrate WASH considerations into urban planning to ensure that infrastructure can meet the demands of growing populations and implement resource management strategies to ensure sustainable water supply and sanitation services, ensure that WASH services are accessible to all, including marginalized and vulnerable communities.
Risk: Increased incidence of waterborne diseases and other health risks associated with poor water and sanitation conditions. **Impact:** Higher healthcare costs, reduced productivity, and increased vulnerability of communities to climate impacts.	Strengthen disease surveillance systems to monitor and respond to waterborne diseases, implement public health interventions to reduce the incidence of waterborne diseases, promote hygiene practices to reduce the spread of diseases and improve overall public health,
Risk: Poverty, inequality, and socio-economic disparities affecting access to WASH services. **Impact:** Marginalized communities facing greater challenges in adapting to climate change and accessing essential services.	Implement programs to alleviate poverty and reduce socio-economic disparities, ensure that WASH services are inclusive and accessible to all, regardless of socio-economic status. Provide livelihood support to communities to reduce dependence on unsustainable WASH practices.

CHAPTER
06

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MONITORING, EVALUATION AND LEARNING

The NAP-WASH Monitoring, Evaluation and Learning (MEL) framework is designed to systematically track progress, assess effectiveness, and ensure accountability in implementing climate-resilient WASH strategies. It provides a structured approach to measuring the outcomes of adaptation interventions, identifying challenges, and facilitating evidence-based decision-making to enhance sustainability and resilience. The Objectives of the framework include:

1. Track implementation progress to ensure that climate adaptation strategies in the WASH NAP are being implemented as planned.
2. Evaluate how adaptation interventions improve access to climate-resilient WASH services.
3. Identify best practices, challenges, and areas for enhancement to support learning & improvement.
4. Ensure transparency and responsible resource allocation among stakeholders.
5. Strengthen Decision-Making through collection of reliable data to inform future policies, investments, and strategies.
6. Monitoring the impact of climate change on WASH Services

6.1 Institutional Context of the System

The key institutions that are significant towards the implementation of WASH related adaptation options in Uganda are hereby provided below:

1. **Ministry of Water and Environment (MWE):** The lead government agency responsible for water and sanitation policies, planning, and implementation. Develop and enforce WASH policies, coordinate national WASH programs, allocate resources, and monitor progress.

2. **National Water and Sewerage Corporation (NWSC):** The main utility provider for water supply and sewerage services in urban areas. Responsibilities: Ensure reliable water supply and sewerage services, maintain infrastructure, and implement water quality standards.

3. **Ministry of Health (MoH):** Responsible for public health and hygiene promotion, including the implementation of sanitation and hygiene programs. Role: Oversee public health and hygiene promotion.

4. **Ministry of Local Government (MoLG):** Coordinates local governments in implementing WASH activities at the district and community levels. Responsibilities: Support district and community-level WASH initiatives, facilitate capacity building, and ensure compliance with national policies.

5. **National Environment Management Authority (NEMA):** Ensures environmental compliance and sustainable management of water resources. Responsibilities: Monitor environmental impacts of WASH projects, enforce environmental regulations, and promote sustainable practices

6. **Uganda National Meteorological Authority (UNMA):** Provides climate and weather data essential for planning and implementing climate-resilient WASH interventions. Responsibilities: Supply accurate weather forecasts, climate data, and early warning systems to inform WASH planning and response.

7. **Uganda Bureau of Statistics (UBOS):** Provides data and statistics necessary for monitoring and evaluating WASH programs. Responsibilities: Collect, analyze, and disseminate WASH-related data, support evidence-based decision-making, and track progress towards targets.

8. **Civil Society Organizations (CSOs):** Organizations such as WaterAid Uganda, Water for People, IRC Uganda, and UWASNET play a crucial role in advocacy, capacity building, and community mobilization. Responsibilities: Raise awareness, engage communities in WASH initiatives, provide technical support, and advocate for policy changes.

9. **Development Partners and Donors:** International organizations such as UNICEF, WHO, World Bank, AfDB and bilateral donors. Role: Provide financial and technical support for WASH projects.

10. **Private Sector:** Companies involved in water supply, sanitation services, and infrastructure development contribute to the implementation of WASH initiatives. In addition, every private sector entity has Corporate Social Responsibility (CSR) to safeguard environment and invest in people's wellbeing. Responsibilities: Invest in WASH infrastructure, provide innovative solutions, and collaborate with public and civil society stakeholders.

11. **Academic and Research Institutions:** Universities and research organizations conduct studies and provide evidence-based recommendations for WASH interventions. Responsibilities: Research into climate change impact on WASH, WASH challenges and solutions, disseminate findings, and support policy development.

12. **Religious and cultural leaders:** These guide and influence the values of their communities through teaching, rituals, and support. This support is important in the coordination, implementation and monitoring of this plan, and establishing social norms with good practices and behaviors.

13. **Vulnerable groups and communities:** Groups such as refugees, people prone to public health emergencies and host communities should be engaged in improving livelihood, nutrition and WASH-related resilience to climatic shock.

6.2 System Components

The MEL system for Uganda's NAP-WASH sector will be based on quantifiable indicators, regular reporting, and participatory review mechanisms across various adaptation strategies. The key components include:

1. **Performance indicators: A set of measurable indicators will track improvements in water security, sanitation, hygiene practices, and overall climate resilience. These include:**
   - Perceived adequacy of the enabling environment for climate resilient WASH services and communities
   - Percentage of climate adaptation and mitigation policies adopted (of adopted policies/Total # of proposed policies *100)
   - Percentage of national budget is dedicated to climate adaptation and mitigation.

2. **Data Collection & Reporting Mechanisms:**
   - Biennial household surveys and assessments, will be conducted.
   - Reports will be compiled annually to track progress and inform policy adjustments.

3. **Institutional Responsibilities:**
   - The Ministry of Water and Environment will oversee the M&E process and ensure alignment with national adaptation priorities.
   - Local governments will implement and monitor community-level WASH interventions.
   - Development partners, CSOs, and the private sector will provide technical and financial support.
   - Communities and Civil Society Organizations will participate in monitoring and feedback mechanisms.

4. **Evaluation Processes:**
   - A Baseline Assessment will establish initial conditions for comparison.
   - Mid-Term Reviews (MTRs) will assess progress and recommend necessary adjustments.
   - A Final Impact Evaluation will measure overall effectiveness in achieving climate resilience in the WASH sector.

5. **Risk Management & Adaptive Learning:**
   - The M&E system will identify risks (e.g., funding gaps, extreme weather events) that may hinder implementation.
   - Adaptive management approaches will ensure flexibility in modifying strategies based on evaluation findings.

6. **Feedback & Learning Mechanisms:**
   - Annual Learning Forums will be organized to share lessons and best practices.
   - Continuous stakeholder engagement will ensure local and national priorities align with climate resilience goals.

6.3 Purpose of Monitoring

The purpose of the MEL is to track progress, assess effectiveness, and ensure accountability in achieving climate-resilient WASH services for all in Uganda.

6.4 Operationalization

The MEL framework for Uganda's WASH National Adaptation Plan will be operationalized through a structured and participatory approach. This will involve clear institutional roles, standardized data collection methods, continuous stakeholder engagement, and adaptive learning mechanisms.

6.5 Monitoring and Evaluation for Reporting

Evaluation Approach

1. Baseline assessment: Conduct an initial assessment to determine the starting conditions for each indicator prior to initiation of the project.
2. Mid-Term Review (MTR): Assess progress halfway through the implementation period to identify most impactful elements of the projects and areas needing adjustment.
3. Endline Evaluation: Evaluate the overall effectiveness and impact of interventions upon completion. The lessons learnt could be used for other projects and programmes as the country intends to scale up interventions.

Key Methods for Data Collection

1. Surveys & field visits: Collect data from communities, schools, refugee settlements and institutions.
2. Use of ICT for collection and analysis of data and information to support knowledge generation.
3. Routine data collection: Use WASH sector databases for tracking investments and project implementation.
4. Review of departmental and sector reports

Feedback & Learning Mechanisms

1. Quarterly reporting: Stakeholders submit progress reports.
2. Annual learning forums: Share lessons learned and best practices.
3. Adaptive management: Modify strategies based on evaluation findings.

Table 14: Monitoring and Evaluation framework

Narrative Summary of Results	Performance Indicator	MOV/Data Source	Baseline	Annual Targets					Data Collection Method	Frequency	Responsibility
			Baseline Value	2026	2027	2028	2029	2030			
Outcome 1: Climate-resilient enabling environment enhanced	Perceived adequacy of the enabling environment for climate resilient WASH services and communities	Climate change / WASH experts							Interview of climate change / WASH experts	Annually	MWE, CSOs
	% of climate adaptation and mitigation policies adopted (of adopted policies/Total # of proposed policies *100)	National Climate Reports and Annual Programme Performance Report							Analysis of climate change policies and plans	Annually	MWE, CSOs
	% of national budget dedicated to climate adaptation and mitigation.	National Budget							Analysis of Government Financial Year Reports Analysis of government spending on climate initiatives	Annually	MWE, MoFPED
Output 1.1: Governance and Policy on climate resilient on WASH strengthened at all levels (Transboundary, national, catchment, district and sub county)	Number of national and subnational WASH policies, plans and strategies integrating climate resilience at district level.	MWE Performance report, District WASH Sector Reports							Review of sectoral climate adaptation and resilience policies, plans at national and district level	Annually	MWE. DLGs
Output 1.2: Finance and resources' mobilization strengthened	# of approved investment plans in place funding WASH and climate resilience interventions.	MOFPED funding report							Document Review (Secondary Data) Interviews (Primary Data) with Officials from Line Ministries, Donor Agency Representatives and WASH CSOs.	Annually	MWE, MOFPED

Narrative Summary of Results	Performance Indicator	MOV/Data Source	Baseline	Annual Targets					Data Collection Method	Frequency	Responsibility
			Baseline Value	2026	2027	2028	2029	2030			
Output 1.3: Capacity and knowledge management enhanced at all levels	Number of District Local Governments with understanding of climate risks and how best to respond to them	District WASH Sector Reports							Surveys, Interviews (DWOs, MWE Officials and CSO working in WASH and climate),	Annually	MWE
Output 1.4: Climate-smart WASH technology and innovations promoted	Number of water supply and sanitation technologies screened according to their suitability to withstand climate related shocks and stresses	Climate & Disaster Risk Assessment Reports							Climate and Disaster Risk Screening Tools developed by World Bank's NDC Technical Assistance Program in collaboration with MWE, MoFPED, and NPA.	Annually	MWE
Output 1.5: Stakeholder coordination strengthened	Existence of collaborative working mechanisms among WASH ministries and departments to align WASH strategies and plans with national climate change priorities	National WASH and Climate Task Force and Cros sectoral working groups							Review of minutes of Inter-ministerial committees or task forces (e.g., WASH & Climate Task Force) Review of minutes of Cross-sectoral working groups (WASH, Environment, Climate, Health, etc.)	Annually	MWE, OPM.
Outcome 2: Water Resources and Ecosystems are monitored and managed to withstand climate risks	Percentage of water resources that are monitored and managed for climate shocks and stresses	MWE Programme Performance Report / MWE Annual Water Monitoring and Assessment report							Analysis of MWE's Monitoring, Reporting, and Verification Tool (web-based platform)	Annually	MWE

Narrative Summary of Results	Performance Indicator	MOV/Data Source	Baseline	Annual Targets					Data Collection Method	Frequency	Responsibility
			Baseline Value	2026	2027	2028	2029	2030			
	Percentage of water sources with a monitoring system in place, to understand how they are being affected by climate change	MWE Annual Water Monitoring and Assessment report / MWE Programme Performance Report							Rural and Urban Management Information System (RUMIS)- digital platform designed to track water service levels. Remote Digital Groundwater Monitoring	Annually	MWE
Output 2.1: Water resources (aquifers and watersheds) protected	No. of water points where a post-construction audit has been completed to ensure that it has been constructed according to climate-informed standards	MWE Department reports, District Water Reports n							Review of Department reports of MWE and District Water reports	Annually	MWE, DLGs
Output 2.2: Water resources' infrastructure established	No. of weather and climate network automated	MWE Programme Performance Report / Climate Adaptation Reports							Review of MWE Programme performance report	Annually	MWE
Output 2.3: Catchment-based water resource management strengthened	Percentage of catchments where water resource pressures are well documented	MWE Programme Performance Reports							Review of MWE Programme performance report	Annually	MWE
Output 2.4 Long-term monitoring systems implemented and maintained	No. of monitoring systems established.	MWE Programme Performance Report / Climate Adaptation Reports							Review of MWE Programme performance report	Annually	MWE
Outcome 3: Access to climate-smart infrastructure improved	Percentage of population with access to safely managed drinking water sources.	JMP SDG Country Files for Uganda (WHO/ UNICEF)	19%					100%	Review of JMP reports	Annually	MWE

Narrative Summary of Results	Performance Indicator	MOV/Data Source	Baseline	Annual Targets					Data Collection Method	Frequency	Responsibility
			Baseline Value	2026	2027	2028	2029	2030			
	Percentage of population with access to safely managed sanitation facilities.	JMP SDG Country Files for Uganda (WHO/ UNICEF)	22%					100%	Review of JMP reports	Annually	MWE
Output 3.1: Climate-smart water supply infrastructure is designed, developed, and maintained	Percentage of water points constructed according to standards	MWE Department reports, District Water Reports n							Review of Department reports of MWE and District Water reports	Annually	MWE, DLGs
Output 3.2: Climate-resilient sanitation infrastructure is designed, developed, and maintained	Percentage of latrines constructed according to climate informed standards in flood risk areas	MWE, MOH Department reports, District Water Reports n							Review of Department reports of MWE, MOH and District Water and Sanitation reports	Annually	MWE, MOH, DLGs
Output 3.3: Water storage enhanced and protected	No. of safe and sufficient storage systems constructed in areas of flood or drought risk	MWE Programme Performance report, Department report							Review of MWE Programme performance report	Annually	MWE
	The percentage of water points that have dried up for at least 1 month out of the previous 12 months	District Water Office reports							Review of DWO reports	Annually	MWE, DLGs

Narrative Summary of Results	Performance Indicator	MOV/Data Source	Baseline	Annual Targets					Data Collection Method	Frequency	Responsibility
			Baseline Value	2026	2027	2028	2029	2030			
Outcome 4: Services for Climate-resilient WASH enhanced	Percentage of households that report good access to affordable sanitation materials, products and services for improving the resilience of their Latrines against climate change impacts	Household assessment Assessments / Report							Household Surveys and Assessments	After every two years	MWE, MoH, DLGs
	Percentage of households that report good access to affordable products and services for improved hygiene activities (including handwashing)	Household assessment Assessments / Report							Household Surveys and Assessments	After every two years	MWE, MOH, DLGs
	Percentage of communities that report easy availability of materials, products and services for improving the resilience of water points against climate change impacts	Household assessment Assessments / Report							Household Surveys and Assessments	After every two years	MWE, District Water Offices, DLGs
Output 4.1: Capacity of public and private institutions responsible for WASH service delivery strengthened	No. WASH professionals/other stakeholders (including local private sector) with sufficient training to integrate WASH and climate resilience in the design of projects	Records of training programmes and capacity-building initiatives for WASH sector professionals							Review of training reports at national and subnational level	After every two years	MWE, MoH

Narrative Summary of Results	Performance Indicator	MOV/Data Source	Baseline	Annual Targets					Data Collection Method	Frequency	Responsibility
			Baseline Value	2026	2027	2028	2029	2030			
Output 4.2: Emergency response capacity for WASH service providers enhanced	Percentage of local WASH agencies with sufficient funding for climate resilience	Assessment of funding for WASH partners report							Review annual financial reports, budget allocation documents, and sector performance reports from local WASH agencies. Surveys with local WASH agencies to gather data on their funding levels, their ability to access financial resources, and whether they have sufficient funding for climate resilience efforts	After every two years	MWE, MoFPED, MoH
Outcome 5: Community climate-resilient WASH practices improved	Percentage of population using sanitation and handwashing facilities following a flood, drought (or other hazard events)	MWE Programme performance report							Review of performance reports for MWE and MOH	After every two years	MOH
Output 5.1: Community knowledge and attitudes on climate-resilient sanitation practices enhanced	Percentage of population practicing open defecation	JMP SDG Country Files for Uganda (WHO/ UNICEF)	2%					0%	Review of JMP reports	Annually	MWE, MOH
Output 5.2: Community knowledge and attitudes on climate-resilient hygiene practices enhanced	Percentage of population using sanitation and handwashing facilities	MWE Programme performance report	35%					80%	Review of MWE Programme performance report	Annually	MWE, MoH

Narrative Summary of Results	Performance Indicator	MOV/Data Source	Baseline	Annual Targets					Data Collection Method	Frequency	Responsibility
			Baseline Value	2026	2027	2028	2029	2030			
Output 5.3: Community-based climate-risk early warning systems enhanced	Percentage of communities that receive adequate and timely warnings from early warning system during a flood, drought or other hazard event.	Uganda Disaster Risk Center Report							Review of Disaster Risk Management Reports	Annually	MWE
Output 5.4 Local markets and supply chains extended and deepened to increase availability of climate resilient WASH products and services	Percentage of service providers reporting adequate supplies of WASH products	Market surveys and Assessment report							Service providers assessment and market surveys	Annually	MWE

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ANNEX 1:

Costing for Outcome 1

Outcome, output and Activities	Cost (UGX)
OUTCOME 1: CLIMATE-RESILIENT ENABLING ENVIRONMENT IS ENHANCED	**20,975,000,000**
Output 1.1: Governance and Policy on climate-resilience WASH strengthened at all levels (Transboundary, national, catchment, district and sub county)	**9,950,000,000**
1.1.1 Developing and disseminating climate-resilient WASH guidelines, regulatory frameworks, WASH building codes, and standards.	1,800,000,000
1.1.2 Integrating climate risk assessments into local WASH planning and decision-making.	2,600,000,000
1.1.3 Promoting adherence to water-use permit conditions.	1,450,000,000
1.1.4 Developing contingency plans for emergency WASH responses to climate-related mobility.	1,750,000,000
1.1.5 Strengthening policies to prevent encroachment on wetlands and critical water catchment areas.	550,000,000
1.1.6 Training entities to establish and implement environmental and social safeguards.	1,650,000,000
1.1.7 Enhancing monitoring and reporting mechanisms for tracking climate-sensitive WASH outcomes.	150,000,000
Output 1.2: Finance and resource mobilization strengthened	**2,025,000,000**
1.2.1. Advocating for establishment of a climate fund, infrastructure bonds, and increased national budget allocation for climate adaptation.	350,000,000
1.2.2 Establishing and strengthening public-private partnerships (PPPs) for sustainable WASH investment.	450,000,000
1.2.3 Developing performance-based financial incentives for climate-resilient WASH service providers.	25,000,000
1.2.4 Developing bankable project proposals for climate-resilient WASH financing.	1,200,000,000
Output 1.3: Capacity and knowledge management enhanced at all levels	**4,750,000,000**
1.3.1 Training WASH stakeholders on climate-resilient WASH.	500,000,000
1.3.2 Developing digital knowledge platforms to share climate adaptation lessons in the WASH sector.	850,000,000
1.3.3 Establishing research partnerships between universities, governments, and CSOs to study climate impacts on WASH.	750,000,000
1.3.4 Training WASH professionals on nature-based solutions and climate-smart water management.	800,000,000
1.3.5 Conducting periodic knowledge-sharing on climate resilience in WASH for service providers and institutions.	400,000,000
1.3.6 Advocating for integration of climate adaptation into the curriculum of WASH-related academic and vocational training programs.	650,000,000
1.3.7 Engaging local influencers and media to promote hygiene behaviours under climate stress.	800,000,000
Output 1.4: Climate-smart WASH technology and innovations promoted	**3,500,000,000**
1.4.1. Developing/promoting climate-smart WASH management systems.	800,000,000
1.4.2 Supporting the research and development of innovative sanitation solutions.	1,200,000,000
1.4.3 Integrating climate resilience data in the Water and Environment Information System (WEIS).	650,000,000
1.4.4 Promoting water-use efficient technologies in agriculture, industry, institutions, and households.	850,000,000
Output 1.5: Stakeholder Coordination Strengthened	**750,000,000**
1.5.1 Establishing national multi-stakeholder WASH steering committee	750,000,000

ANNEX 2:

Costing for Outcome 2

Outcome, output and Activities	Cost (UGX)
OUTCOME 2. WATER RESOURCES AND ECOSYSTEMS ARE MONITORED AND MANAGED TO WITHSTAND CLIMATE RISKS	**140,750,000,000**
Output 2.1: Water resources (aquifers and watersheds) protected	**76,750,000,000**
2.1.1 Demarcating and restoring degraded buffer zones of wetlands, rivers, and lakes	25,500,000,000
2.1.2 Mapping and gazetting groundwater recharge areas.	1,800,000,000
2.1.3 Establishing soil and water conservation practices.	1,250,000,000
2.1.4 Implementing reforestation and afforestation projects around watersheds and aquifers to enhance water retention.	45,000,000,000
2.1.5 Strengthening water resources assessments and monitoring.	3,200,000,000
Output 2.2: Water resources' infrastructure established	**14,500,000,000**
2.2.1 Promoting rainwater harvesting and flood control structures.	5,800,000,000
2.2.2 Developing artificial groundwater recharge.	7,500,000,000
2.2.3 Promoting water reuse.	1,200,000,000
Output 2.3: Catchment-based water resource management strengthened	**16,300,000,000**
2.3.1 Preparing/updating integrated catchment management plans that align with climate adaptation strategies.	3,500,000,000
2.3.2 Promoting collaboration on transboundary catchment management.	2,800,000,000
2.3.3 Establishing and strengthening catchment-based water governance structures by enhancing coordination among stakeholders.	3,500,000,000
2.3.4 Installing early warning systems to monitor climate-related hazards.	6,500,000,000
Output 2.4 Long-term monitoring systems implemented and maintained	**33,200,000,000**
2.4.1 Installing early warning systems to monitor climate-related hazards.	18,000,000,000
2.4.2 Monitoring water availability and quality	2,400,000,000
2.4.3 Upgrading, maintaining and operating hydrological information systems	9,600,000,000
2.4.4 Constructing and equipping the National Water Quality Reference Laboratory and related facilities	3,200,000,000

ANNEX 3:

Costing for Outcome 3

Outcome, output and Activities	Cost (UGX)
OUTCOME 3. ACCESS TO CLIMATE-SMART WASH INFRASTRUCTURE IS IMPROVED	**749,300,000,000**
Output 3.1: Climate-smart water supply infrastructure designed, developed, and maintained	**274,750,000,000**
3.1.1 Redesigning existing water supply systems to withstand climate hazards.	8,500,000,000
3.1.2 Constructing rainwater harvesting systems at all levels (catchment, institution and household).	25,000,000,000
3.1.3 Upgrading existing water distribution infrastructure to minimize losses through leaks and inefficiencies	150,000,000,000
3.1.4 Motorising high-yielding boreholes using clean energy (wind & solar).	90,000,000,000
3.1.5 Promoting water-use efficient technologies in agriculture, industry, institutions, and households.	1,250,000,000
Output 3.2: Water storage enhanced and protected	**435,000,000,000**
3.2.1 Developing and maintain multipurpose reservoirs for storing excess water during wet seasons for use during dry spells.	185,000,000,000
3.2.2 Constructing large-scale multi-purpose water reservoirs.	250,000,000,000
Output 3.3: Climate-resilient sanitation infrastructure designed, developed, and maintained	**39,550,000,000**
3.3.1 Constructing/upgrading inclusive sanitation facilities to withstand climate hazards in institutions and public places prone to climate hazards.	9,500,000,000
3.3.2 Promoting decentralized wastewater treatment systems to reduce pollution and improve resilience.	1,250,000,000
3.3.3 Upgrading institutional/public sanitation infrastructure in vulnerable communities.	4,800,000,000
3.3.4 Promoting the use of climate-smart wastewater and faecal sludge treatment systems.	3,500,000,000
3.3.5 Promoting nature-based solutions, such as constructed wetlands, for water filtration and pollution control.	15,500,000,000
3.3.6 Promoting the construction of eco-friendly sanitation systems, such as bio-digesters, for energy and waste management.	5,000,000,000

ANNEX 4:

Costing for Outcome 4

Outcome, output and Activities	Cost (UGX)
OUTCOME 4. SERVICES FOR CLIMATE-RESILIENT WASH ARE ENHANCED	**43,000,000,000**
Output 4.1: Capacity of public and private institutions responsible for WASH service delivery strengthened	**8,700,000,000**
4.1.1 Developing and implementing training programs for WASH service providers on climate-resilient WASH practices.	1,500,000,000
4.1.2 Establishing performance-based accountability frameworks for WASH institutions to improve service efficiency.	1,800,000,000
4.1.3 Enhancing data collection and reporting systems for WASH institutions to improve evidence-based decision-making.	1,250,000,000
4.1.4 Developing community-based financing models for the maintenance of climate-resilient WASH infrastructure.	1,200,000,000
4.1.5 Establishing monitoring and evaluation (M&E) systems to track climate impacts on WASH service delivery.	800,000,000
4.1.6 Supporting startups and entrepreneurs in developing innovative WASH solutions for climate adaptation.	1,500,000,000
4.1.7 Creating community-based financing models for the maintenance of climate-resilient WASH infrastructure.	650,000,000
Output 4.2: Emergency response capacity for WASH service providers enhanced	**34,300,000,000**
4.2.1 Developing and implementing emergency WASH response plans for climate-related disasters.	30,000,000,000
4.2.2 Training WASH service providers on emergency response protocols and disaster preparedness.	1,800,000,000
4.2.3 Enhancing public awareness of emergency hygiene measures to prevent disease outbreaks during disasters.	2,500,000,000

ANNEX 5:

Costing for Outcome 5

Outcome, output and Activities	Cost (UGX)
OUTCOME 5. COMMUNITY CLIMATE-RESILIENT WASH PRACTICES ARE IMPROVED	**39,200,000,000**
Output 5.1 Community knowledge and attitudes on climate-resilient sanitation practices enhanced	**16,950,000,000**
5.1.1 Integrating climate risk awareness into sanitation approaches (Community-Led Total Sanitation, Market-based Sanitation, Incentives, behavioural change campaigns, etc).	3,250,000,000
5.1.2 Promoting climate-proof sanitation interventions for vulnerable communities.	1,800,000,000
5.1.3 Developing guidelines for integrating climate adaptation into sanitation promotion approaches.	1,750,000,000
5.1 4 Promoting locally led low-cost production of climate-resilient sanitation materials.	1,850,000,000
5.1.5 Implementing water conservation awareness programs for efficient water use in households and industries.	2,200,000,000
5.1 6 Establishing and training community water source protection committees	3,600,000,000
5.1.7 Supporting schools in implementing climate-adaptive sanitation solutions to enhance health and hygiene.	2,500,000,000
Output 5.2 Community knowledge and attitudes on climate-resilient hygiene practices enhanced	**9,800,000,000**
5.2.1 Developing and promoting targeted messages and practices on hygiene interventions addressing climate-induced water scarcity challenges.	2,800,000,000
5.2.2 Promoting the use of water-efficient handwashing facilities to conserve water in drought-prone areas.	1,800,000,000
5.2.3 Advocating for the integration of climate-resilient hygiene component into school curricula.	1,500,000,000
5.2.4 Promoting community participation in WASH governance structures to enhance accountability	2,500,000,000
5.2.5 Developing and promoting menstrual hygiene management solutions adaptable to changing climate.	1,200,000,000
Output 5.3 Community-based climate-risk early warning systems enhanced	**10,650,000,000**
5.3.1 Developing and promoting early warning systems for WASH-related climate hazards.	3,250,000,000
5.3.2 Training local communities on emergency WASH response and recovery protocols.	1,500,000,000
5.3.3 Promoting community-based climate-risk vulnerability assessments.	2,400,000,000
5.3.4 Promoting collaboration on transboundary WASH risk reduction measures.	3,500,000,000
Output 5.4 Local markets and supply chains extended and deepened to increase availability of climate resilient WASH products and services	**1,800,000,000**
5.4.1 Supporting local markets and supply chains for resilient WASH systems/ technologies	1,800,000,000

ANNEX 6:

Guide to Smart WASH Infrastructure

1. **Redesigning existing water supply systems to withstand climate hazards.**
    - Land scaping and flood protection of water sources for reliable water supply
    - Monitoring of wells to observe existing situations and estimate groundwater variations in relation to long droughts to inform depth of borewells and need for the placement of pumps.
2. **Constructing rainwater harvesting systems at all levels.**
    - Capacity of rainwater harvesting structures to factor in the projected dry spells as buffer storage
    - Use of Managed Aquifer Recharge (MAR) technologies to ensure sustainable groundwater recharge using rainwater.
3. **Upgrading existing water distribution infrastructure using ICT.**
    - Use of improved utility systems such as Supervisory Control and Data Acquisition (SCADA) systems to capture and present real-time information on pipe leaks and water losses to increase water use efficiency.
    - Use of online systems to facilitate data collection, tariff payments, new connection request and repairs improving water user – utility engagement for sustainable service delivery
4. **Developing and maintaining large-scale multipurpose reservoirs.**
    - Construction of underground water tanks for mass water storage
    - Use of valley dams for water storage
    - Use of sand dams to store water and counter evapotranspiration losses
5. **Constructing climate-adaptive sanitation facilities in public institutions.**
    - Raise the plinth heights of facilities and that of the septic-tanks/ pits to ensure flood protection
    - Construction of urine diverting dry-toilets or ECOSAN sanitation system in flood prone areas
6. **Promoting decentralized wastewater treatment and eco-friendly sanitation systems.**
    - Faecal Sludge Management (FSM) such as biodigesters to treat fecal sludge and produce biogas and slurry for manure on site.
    - Other potential FSM options to prevent pollution of water resources
7. **Reliable energy support to operate high-yielding boreholes using clean energy**
    - Improve resilience of water supply system with reliable local energy support – key sources solar and wind
    - Use of clean energy sources to motorize high yielding boreholes with more pumping hours providing more water for storage
8. **Promoting efficient water-use technologies in agriculture, industry, institutions and households.**
    - Use of drip irrigation systems to minimize evapotranspiration.
    - Promoting water reuse and recycling to improve water-use efficiency
    - Measurement and tracking of water footprint of industry activities and revise the activities to use less water
9. **Promoting nature-based solutions**
    - Land scaping and flood protection of water and sanitation infrastructure
    - Agroforestry and terracing of slopes to protect water systems and sanitation infrastructure from landslides

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