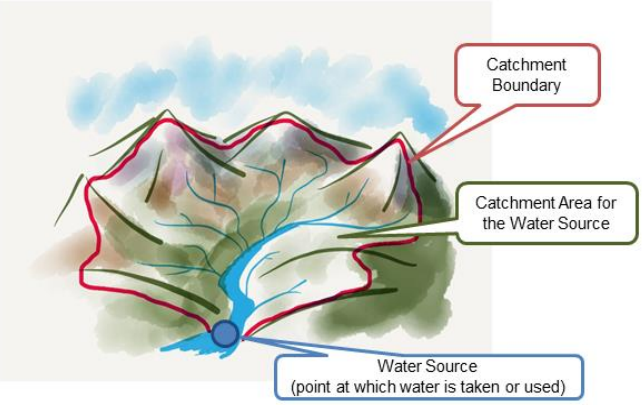
STRATEGY FOR OPERATIONALIZING

STAKEHOLDER CONTRIBUTION TOWARDS WATER SOURCE PROTECTION



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Acknowledgement

The preparation of the Strategy for Operationalizing Stakeholder contribution towards Water Source Protection has been undertaken by the Ministry of Water and Environment (MWE) in collaboration with stakeholders in the Water and Environment Sector.

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Acronyms

CbWRM	Catchment base Water Resources Management
CSO	Civil Society Organization
DEA	Directorate of Environment Affairs
DIM	District Implementation Manual
DWD	Directorate of Water Development
DWRM	Directorate of Water Resources Management
EIA	Environmental Impact Assessment
FBO	Faith Based Organizations
GWC	Green Water Credit
IWRM	Integrated Water Resources management
KCCA	Kampala Capital City Authority
MoFA	Ministry of Foreign Affairs
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MEMD	Ministry of Energy and Minerals Development
MoESTS	Ministry of Education, Science, Technology and Sports
MoFPED	Ministry of Finance, Planning and Economic Development
MoGLSD	Ministry of Gender, Labour and Social Development
MoH	Ministry of Health
MoU	Memorandum of Understanding
MTW	Ministry of Transport and Works
MWE	Ministry of Water and Environment
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
NWSC	National Water and Sewerage Corporation
O&M	Operations and Maintenance
PCS	Payment for Catchment Services
PES	Payment for Ecosystems Services
PWS	Payment for Water Services
PWSP	Payment for Water Source Protection
TSU	Technical Support Unit
UO	Umbrella Organization
WMZ	Water Management Zone
WSDF	Water and Sanitation Development Facility
WSPG	Water Sources Protection Guidelines

Glossary

For purpose of this Strategy, the following definitions shall apply:

Water Source: Water Source is a geographical location where water is taken from the environment and used for a specific socio-economic purpose, such as water supply, agriculture or hydroelectricity generation.

Water Source Point: a water supply abstraction location where the suppler or user collects the water from the water source.

Water Source Catchment: a drainage basin or area of land housing water aquifers that replenish the water sources.

Water Source Protection: management interventions aimed at maintaining and or improving the condition of the catchment so as to sustain water availability, reduce degradation of surface and groundwater resources, protect supply infrastructure, or avoiding water use related conflicts between and among upstream and downstream users.

Water infrastructure: consists of water supply infrastructure encompassing piped water, point source multipurpose reservoirs and HEP stations.

Water Catchment: a drainage basin or area of land from which surface water drains to a single exit point (usually a point on a river or the estuary where a river enters the sea). *Note: some literature use 'watersheds' or 'river basins' to mean the same entity*.

Catchment protection: management actions taken to maintain and improve the biophysical condition of the catchment environment so as to maintain both water quality and water quantity in the catchment.

EXECUTIVE SUMMARY

This is a Strategy for guiding stakeholder contribution towards water source protection as provided for in the Water Sources Protection Guidelines (2013). The Strategy provides a road map for operationalizing the decision made by the Joint Technical Review (JTR) 2010 meeting and subsequent Water Sector Working Group (WESWG) meetings in 2013 and adopted by the Water Policy Committee requiring that 3% of water infrastructure budgets should be allocated to catchment and source protection.

The purpose of the Strategy is to provide the Ministry of Water and Environment (MWE) and stakeholders in water sources protection, a roadmap for ensuring an effective structured engagement of stakeholders in contributing towards water sources protection, enhancing inclusivity and ensuring improved understanding of problems affecting water quality and availability.

The development of this Strategy takes into account two main factors: i) the need to protect water sources in order to address increasing challenges of sustaining adequate supply of clean water, and, ii) stakeholder shared vision of increasing access to clean and safe water to all and access to water for production activities. The Strategy targets contributions from the following infrastructure as defined in the Water Sources Protection Guidelines (2013): Piped water, Point Source, Multipurpose reservoirs and hydroelectric power generation

The Strategy elaborates on the Goal and Objectives of Stakeholder contribution to water sources protection, stakeholders targeted to contribute to the water sources protection, sources of contribution, modalities for managing and utilizing the contribution, priority actions that benefit from the contribution as well as implementation requirements and arrangements for this Strategy.

Stakeholders in water resources management will be engaged throughout the entire process of water source protection involving the following stages: a) identifying water source protection issues and planning for water source protection per location; b) identifying protection measures, and options; c) identifying implementation requirements and designing implementation arrangements and processes; d) contributing to protection costs; and, e) defining means to monitor and evaluate protection progress and outcomes. However, institutions with mandate to supply water would have a bigger stake in order to ensure they are able to fulfill their obligations.

The Long-term objective or goal of the stakeholder contribution to water sources protection is “To sustain supply of good quality and affordable water” for the socio-economic and livelihood needs. This goal will be realized through the following objectives:

a. To mobilize and sustain stakeholders contribution to water sources protection.
b. To enforce measures for ensuring an efficient and effective management and utilization of stakeholder contributions.
c. To protect water sources from threats to water quality and water quantity.

These objectives will be implemented through the following three broad strategies:

a. Strategy ONE: Computing 3% Contribution. This strategy provides basis for computing contributions from new and existing water supply infrastructure of value exceeding USH 100m.
b. Strategy TWO: Strategies for prioritizing potential protection activities. It provides for consideration and procedures for identifying priority interventions to be supported.
c. Strategy THREE: Strategies for managing and utilizing the Contribution. It provides mechanisms for collecting, managing and accounting for the contributions.

A successful implementation of this Strategy will result into:

a. Enhanced Stakeholder commitment and participation in water sources protection.
b. Additional financial and technical resources for water sources protection.
c. Increased access to clean and affordable water.
d. Improvement in management of natural resources around water sources or within catchment of water sources.

The strategy describes the roles and responsibilities of various stakeholders in implementing the strategies and interventions. The MWE and Water infrastructure developers and operators will play the lead role. However, Lead agencies responsible for managing environmental and or land based activities affecting water sources (e.g., forestry, wetlands, rangelands, river banks and lake shores, land, agriculture, housing, population, road infrastructure, hydropower generation, etc.) will be required to provide technical leadership and policy guidance and take lead in implementing priority water sources protection interventions that fall under their mandates. This requirement will ensure that water source protection activities remain integral components of their mandate and programmes.

The implementation of this Strategy is likely to face risks and uncertainties that could render it ineffective. The following risks have been identified:

a) Maintaining the balance between core business (mandate) of Stakeholders and participation in implementing water sources protection plans or supported activities.

b) Demonstrating good leadership and accountability in order to sustain the credibility of the Strategy and management of the contributions.

c) Demonstrating value addition through quality service and products.

d) Sustaining contributions since the collaboration and participation require sustained commitment and may involve substantial financial and technical resources.

The Strategy recommends the following measures for managing the identified risks.

a. **Mandatory contribution:** the contribution to water source protection shall be mandatory for all stakeholders and water users define din the Source Protection Guidelines.

b. **Integrating contribution into capital development budget:** This measure aims at ensuring that budgets for new water infrastructure incorporate the stakeholder contribution towards water source protection. The implementation of this measure requires that water infrastructure developer(s) includes this contribution as part of the budget for capital development.

c. **Integrating budget for water sources protection into conditional grants:** This measure aims at "ring-fencing" water source protection contribution within the conditional grants to districts and ensuring that such funds are utilized for the intended purpose.

d. **Integrating contribution in recurrent expenditure (O&M):** this measure aims at ensuring regular contributions towards water source protection are integral components of the O&M budgets of water infrastructure.

e. **Strengthen enforcement tools:** through the following measures:

   i. Upgrading Water Sources Protection Guidelines into "Regulations" so as to strengthen their legal enforcement force. This measure would be considered by the MWE at macro level (Water and Environment Sector) and process it through established procedures.
   ii. Incorporating provisions for contribution to Water Source Protection in the MoUs or Performance Contracts with Local Water Authorities or Operators.
   iii. Incorporating provisions for contribution to Water Source Protection among the Standard condition of the Water Permits and EIA Certificates.

f. **Compliance:** this measure aims to ensure that stakeholder obligations are met and the generated funds are utilized in accordance with the approved Water Source Protection Plans. This measure will be realized through applying an effective Monitoring system applicable at policy by Water Policy and MWE, sector level by Water and Environment Sector Working Group, and at catchment levels by DWRM (WMZ Offices), as appropriate. The following incentive measures will be applied to achieve compliance:

   i. **Water Sources Protection Plans:** All water source protection activities shall be defined in the Water Source Protection Plans developed and approved in accordance with the procedures defined in the Water Source Protection Guidelines. All contributions shall be utilized solely for the implementation of actions prioritized in the Water Source Protection Plan.

   ii. **Communication and creating awareness:** this measure entails wide publicity of Water Source Protection Guidelines and Stakeholder contribution Strategy across all sectors and all levels, including private sector so as to ensure that their existence is known and their application is well understood. This is a responsibility of DWRM.

iii. **Transparency and Equity:** to enhance ownership and compliance with the requirements, all assessments, contributions and use of the contributions shall be done in a transparent manner, including full disclosure of the information on the assessment, contributions, use of the contributions and changes or improvements accruing from the contributions.

iv. **Participation in decision making:** Stakeholder shall participate in decision making platforms regarding the use of funds or in-kind contribution. Contributions shall be managed and accounted for in accordance with the financial management procedures provided in the approved Water Source Protection plan or other binding measure agreed upon by stakeholders.

v. **Complementarities:** designing and applying planning and implementation tools that ensure that water source protection activities supported by the stakeholder contributions compliment running and previous programmes of various stakeholders in the water source catchment.

vi. **Mobilize water users and water source stakeholders**: to appreciate the risks and benefits of poorly managed or neglected water sources that in turn undermine continuous water supply in good quality and quantities.

1. INTRODUCTION

1.1 The Strategy

This is a Strategy for guiding stakeholder contribution towards water source protection as provided for in the Water Sources Protection Guidelines (2013). The strategy provides a road map for operationalizing the decision made by the Joint Technical Review (JTR) 2010 meeting and subsequent Water Sector Working Group (WESWG) meetings in 2013 and adopted by the Water Policy Committee requiring that 3% of water infrastructure budgets should be allocated to catchment and source protection.

The Strategy elaborates on the Goal and Objectives of Stakeholder contribution to water sources protection, stakeholders targeted to contribute to the water sources protection, sources of contribution, modalities for managing and utilizing the contribution, priority actions that benefit from the contribution as well as implementation requirements and arrangements for this Strategy.

Further, the Strategy document provides justification for stakeholder contribution, baseline information on ongoing water sources protection practices within and outside Uganda, water source protection stakeholders, institutional, legal and policy environment for stakeholder contribution, sources of contribution for various stakeholders, eligible protection activities as well as procedures for managing the contributions. The Strategy specifically defines:

a. Priority stakeholders eligible for contribution.
b. Stakeholder interests and obligations.
c. Mechanisms for determining contribution, eligible activities and management of the contributions.
d. Implementation requirements and arrangements.

1.2 Justification for developing the Strategy

The justification for developing this Strategy takes into account two main factors: i) the need to protect water sources in order to address increasing challenges of sustaining adequate supply of clean water, and, ii) stakeholder shared vision of increasing access to clean and safe water to all and access to water for production activities. The Strategy targets contributions from the following infrastructure as defined in the Water Sources Protection Guidelines (2013): Piped water, Point Source, Multipurpose reservoirs and hydroelectric power generation.

1.2.1 Protecting water sources

The requirement to protect water sources is a response to increasing challenges of sustaining adequate supply of clean water mainly due to declining water quantities and quality in the water source catchments. Declining water quantity and quality is attributed mainly to degradation of catchment by human activities or natural factors such as effects of climate change. As a consequence, inputs for providing clean water and uninterrupted or reliable water supply have increased over time. Such an example is with NWSC where unit cost of water treatment increased from Uganda Shillings 670 in FY 2002/2003 to Uganda shillings 1,650 in FY 2012/2013 (Annex 1).

1.2.2 Securing stakeholders contribution

The protection of a water sources is of interest to various stakeholders in water resources management, including those with mandate to manage various components of the catchment such as land, forests, wetlands, open water as well as those with mandate to supply water. This is because they all have a shared vision of increasing access to clean and safe water to all and access to water for production activities.

The contribution to Water Source Protection constitutes the monetary value of the contribution made by a water infrastructure or operator or water user towards the cost of preparing and implementing activities described in the Water Sources Protection Plans. In the event that there is no Water Source Protection Plan, the contribution will focus on interventions recommended in the Environmental Management Plan of the approved EIA or those source protection interventions identified during the infrastructure design, until the Source Protection Plan is in place. The stakeholder contribution should, at minimum, achieve tangible results in terms of reduced pollution and sustaining water levels or quantity[1].

Stakeholders in water resource management should collaborate in water source protection because of the following reasons, among others:

a) **Issues affecting water availability**: Uganda has witnessed decline in vegetation cover mainly due to expansion of agricultural activities, human settlement and industrial establishment. As a result, the capacity for these catchments to retain and purify water has been undermined or lost thereby leading to prevalence of rapid water runoff, soil erosion and water scarcities. Even though much of Uganda has a high annual rainfall, with an average of 1,200 mm per year, water shortages in the dry season are increasingly common. This phenomenon renders the protection of water sources or water catchments, crucial to ensure supply of water in adequate quantities and quality throughout the year.

   Therefore, protecting water sources from threats such as pollution, siltation and low water flows requires interventions that need technical and financial resources beyond a mandate, financial and technical capacity of a single institution, hence the need for collaboration in designing and implementing remedial actions.

b) **Rising costs of ensuring uninterrupted supply of good quality water in adequate quantities**: the conventional approach to ensuring high quality water in public water supply systems through construction and use of water treatment facilities at the point of abstraction is generally effective. However, it is increasingly becoming costly to sustain supply of good quality water as well as met the increasing demand for water supply. For example, the dirtier the water is, the more intensive (and expensive) it is to treat it to an acceptable potable quality. Even then, there may still be residual problems with micro-pollutants that are difficult to remove effectively. This situation is even more challenging in rural water supply schemes where purification facilities are non-existent. Annex 2 and Annex 3 show sample costs from NWSC and WSDF, respectively.

[1] It would be expected that mandated institutions will fund interventions not covered by the contributed funds.

1.2.3 Requirement for water and sanitation commitments

The Vision 2040 targets to increase water consumption from current 26 to 600 cubic meters per capita by 2040 and to increase the proportion of population accessing safe piped water from current 15% to 100% by 2040. The Strategy aims to guide the Water and Environment Sector in protecting water sources in order to ensure that there is continued availability of water in good quantities and quality in order to support the attainment of the 2040 targets.

1.3 The Purpose of the Strategy

The purpose of the Strategy is to provide the Ministry of Water and Environment (MWE) and stakeholders in water sources protection, a roadmap for ensuring an effective structured engagement of stakeholders in contributing towards water sources protection, enhancing inclusivity and ensuring improved understanding of problems affecting water quality and availability.

Stakeholders in water resources management will be engaged throughout the entire process of water source protection involving the following stages: a) identifying water source protection issues and planning for water source protection per location; b) identifying protection measures, and options; c) identifying implementation requirements and designing implementation arrangements and processes; d) contributing to protection costs; and, e) defining means to monitor and evaluate protection progress and outcomes. However, institutions with mandate to supply water would have a bigger stake in order to ensure they are able to fulfill their obligations.

Furthermore, stakeholders in water resources management are also expected to effectively identify synergies with other local, national/regional programmes that should be promoted or overlaps with local, national /regional programmes that should be harmonized so that the protection strategies add value to existing efforts and strengthen the linkage between drivers and effects of water quality and availability.

1.4 The process of developing the Strategy

The Strategy was developed in a participatory process led by MWE (through Directorate of Water Resources Management) and involving Water Policy Committee and stakeholders in water resources management individually and through water and environment sector coordination structures and processes. The process included establishing baseline information (Annex 4), consultations with stakeholders (Annex 5), designing and validating the strategy.

2. SITUATION ANALYSIS OF WATER RESOURCES MANAGEMENT

The analysis of issues that inform the Strategy focuses on the following: water sources management and protection issues (management and protection needs challenges), ongoing water sources protection activities and plans, principles for guiding the 3% contribution to water sources protection and, priority management and protection issues. The analysis is presented in subsequent sections.

2.1 Water sources management and protection issues

There are diverse and complex issues pertaining to management and protection of water sources. They include sustaining water quantity and quality, multi-stakeholder interest and players, increasing water demand, institutional capacities for water resources management, among others. These issues have been elaborated in section 1.2.

2.2 Ongoing source protection activities

The information presented in subsequent section highlights Uganda's examples of water source point protection as well as examples of catchment or watershed protection from South Africa, Australia, United Kingdom, India, China and Vietnam.

2.2.1 Examples of water source point protection within Uganda

a) National Water Sewerage Corporation (NWSC): the NWSC Strategic Plan (2012-2015) provides for source protection and for mobilizing stakeholders for efficient management of catchments. Accordingly, this Strategic Plan provides an assessment of critical stressed areas for immediate attention and for implementing water safety plans that include management of water quality risks and enhancing water source catchment management.

In spite of these strategies that would offer solutions to the protection of water sources for NWSC supply infrastructure, NWSC faces the following challenges when protecting water sources:

i. **Definition of water source**: NWSC defines water sources mainly in context of water quality/pollution challenge. This definition therefore directs NWSC to trace sources or likely sources of pollution and to design interventions that are geared towards addressing pollution. As such, this definition does not address water quantity as well as upstream and downstream user's issues.

ii. **Lack of Water Sources Protection Plans**: There are no water sources protection plans as required by the Water Source Protection Guidelines (2013). Instead, there are activity schedules/plans for guiding planning and budgeting for issues pertaining to pollution control. This situation is attributed to the fact that NWSC operates water infrastructure which are handed over to the institution without sufficient information on water source protection issues and with no Water Source Protection Plans.

iii. **Stakeholder engagement**: NWSC has not engaged stakeholders in planning for water source protection and continues to implement water source protection activities from its own perspectives. However, NWSC recognizes the need for multi-stakeholder engagement in planning for water source protection and implementation of protection interventions.

b) Umbrella Organizations (UO): these institutions provide technical advisory and operational and management support to water supply boards. Umbrella organizations provide training, legal and organizational management advice, monitor water quality and support infrastructure supervision and maintenance support.

With regards to water source protection, Umbrella organizations facilitate the planning and budgeting for serviced water supply systems. The current practice focuses on acquiring land that is designated "protection zone" covering 50m x 60m for deep well/boreholes and 50mX100m for springs, fencing such land and maintaining the "fenced" protection zone being the immediate environment to the abstraction point.

The Umbrella Organizations are faced with challenges of sources protection which include operational procedures that define protection as water source point protection zone, influencing land use in the water source catchment, mobilizing communities/stakeholders to undertake effective source protection and lack of Source Protection Plans.

In future, Umbrella Organizations have opportunity to promote water source protection through facilitating the development and implementation of Water Source Protection Plans.

c) Water and Sanitation Development Facility (WSDF): their primary responsibility is to develop infrastructure for water supply and sanitation in small towns and rural growth centres, using procedures described in the Water Supply Design Manual (2013). This Manual provides for water source protection.

Presently, WSDF provide for a budget within the infrastructure development phase/design and construction stage ranging between UGX 25-50 million and UGX 30-35 million for protecting water sources for springs and borehole/wells, respectively. This budget is mainly spent on fencing the acquired land designated "protection zone", promoting sustainable land management practices on the fenced land, and maintenance of natural vegetation on the fenced land, including tree planting where appropriate. In future, it is expected that these budget provisions will be revised to reflect the requirements for protection of water sources as defined in the Water Source Protection Manual (2013).

At operations level, WSDF's recognize the need for stakeholder's (Districts, Water Authorities and Sub-counties) participation in managing issues that affect water quality and quantity. The WSDF 's face the following challenges in dealing with water source protection: i) previous operational procedures did not provide for development and implementation of comprehensive Water Source Protection Plans; ii) WSDF's mandate is restricted to constructing water infrastructure and therefore, WSDF's are not in good position to ensure water source protection after the water infrastructure has been commissioned and handed over to a Water Authority (usually Local Governments).

However, the WSDF's are optimist that when the Water Sources Protection guidelines are applied in future water infrastructure, comprehensive water source protection plan will be developed and by time of commissioning the infrastructure.

2.2.2 Experiences of catchment or watershed protection from outside Uganda

There are different approaches in several countries towards mobilizing stakeholder contribution to management of water source points or watershed/catchment. The most common approach is Payment of Ecosystem Services (PES). Other forms of contribution include Payment for Water Services (PWS) (e.g., in China, Latin America, USA), Payment of Catchment Services (PCS) (e.g., in South Africa), and, Payment for Water Source Protection (PWSP) (e.g., by South Africa involving Coca-Cola, Woolworth and SABMiller). These examples are illustrated in Annex 6.

a) **Payments for ecosystem services** (PES), also known as **payments for environmental services (or benefits)**, are incentives offered to farmers or landowners in exchange for managing their land to provide some sort of ecological service. PES is a voluntary transaction in which a well-defined environmental service or a form land use likely to secure that service is paid for by a buyer from a supplier on condition that the suppler continues to supply that service.

b) **Payment for Water Services (PWS):** according to the compensation methods, major approaches are divided into compensation in cash, compensation in kind, compensation via appropriate policies and compensation via appropriate technologies and knowledge. Implementation bodies and their operational schemes are key in determining the chief characters of compensation methods, which can generally be categorized into two types: government compensation and market compensation.

c) **Payment of Catchment Services (PCS**): are voluntary schemes linking upstream land use and management with downstream water use and management to realize benefits for upstream and downstream participants in the scheme and others in the area including, the environment.

From the above examples and other references, it can be deduced that the contribution to protection of water sources addresses the following:

a. **The character of the scheme (Voluntary e.g. in Kenya or Mandatory schemes e.g., in China)**: there is a mixture of both voluntary and mandatory schemes. In most schemes, Payment for Water Services (PWS) is voluntary e.g., Latin America while mandatory schemes have focused on Water Quality Trading Schemes e.g., in Australia.

b. **Establishing the basis for computing the payment**: some schemes have based contribution of pollution control (e.g., in China), volume of water used (e.g., in South Africa), or the economic value of the water used (e.g., in commercial agriculture or industrials development e.g., in South Africa) The amounts to be contributed have largely been based on combination of these factors on a case by case.

c. **Setting priorities benefitting from funds accruing from stakeholder contributions**: on case by case, schemes have engaged stakeholders in participatory planning processes to define the priority concerns and corresponding interventions that would benefit from the fund e.g. in Kenya. Common interventions comprise of afforestation/reforestation, forest restoration, wetlands management, sustainable land management, river bank/lake shore management, among others.

d. **Establishing the Fund**: contributions to water source protection/watershed protection are managed in a pool. A fund dedicated to receive the contributions has been established in some countries e.g., Latin America.

e. **Managing the fund**: most schemes have established stakeholder controlled structure (Committee) to manage the funds. E.g. Latin America.

f. **Linkages with Water levies/fees**: contributions are linked to the water abstraction permits, whereby, proportion for contributing to water source protection is a percentage of the permit fees. In this case, permit fees are assessed based on volume of water supplied/consumed.

2.2.3 Distinction between contributing towards Water Source Protection and other economic tools for mobilizing contribution towards environmental goods and services.

There is clear distinction between contribution to water sources protection and other economic tools used to mobilize contribution towards environmental goods and services. In 2013, MWE issued Water Source Protection guidelines that make it **mandatory** for developers of water infrastructure, stakeholders and water users to protect water sources or contribute to water source protection. Water supply infrastructures are required to include budget for protecting water source. The Water Sources Protection Guidelines complement other policy and legal requirements for protecting water resources.

In situations where economic tools for environment management e.g., Payment for Ecosystem Services, Payment for Catchment Services, Payments for Water Sources Protection, and, Payment for Water Services are applied, these tools tend to be **voluntary** schemes by Water Users that demonstrate the interest of “users” to support sustenance or enhancement of environmental goods and services. The voluntary schemes do not necessarily involve developers of water supply infrastructure or institutions mandated to supply water.

3. KEY CONSIDERATIONS IN DEVELOPING THE STRATEGY

The development of the Strategy took into account technical definitions of water sources, water source protection, institutional mandates for source protection, and stakeholder's responsibilities for water resources management, policy and legal frameworks for water resources management and views from Stakeholders on stakeholder's contribution to water sources protection. These considerations are elaborated in subsequent sections:

3.1 Definitions of Water sources and Source protection

a. Water Sources: according to the Uganda's Water Source Protection Guidelines (2013), a water source is a geographical point or piece of infrastructure, where water is taken from the environment and used for a specific socio-economic purpose, such as water supply, agriculture (water for production - livestock/irrigation) or hydro-electricity generation. A water source is found in a water source catchment. The size of water source catchment varies depending on hydrology, physical characteristic of the area as well as the type of water infrastructure. For example, size of water source catchment for a motorized borehole would be smaller when compared with the piped water infrastructure.

b. Water Source Protection: is a set of management interventions aimed at maintaining and or improving the condition of the biophysical environment of the water source catchment so as to sustain the availability (quantity) and quality of surface and underground water, protecting supply infrastructure, or avoiding water use related conflicts between and among upstream and downstream user. Protecting water source seeks to build partnerships between water suppliers, users and surrounding human activities and natural climatic changes that are impacting water quantity and quality.

3.2 Institutional mandates for water source protection

The institutional framework for the management of water resources entails water resources management at five levels, namely, i) national level (centre), ii) district level, iii) water management zone level, iv) catchment level, and v) community level.

The over-all responsibility for water resources management is vested in the Ministry of Water and Environment (MWE) and National Water Policy Committee. Other government ministries and agencies as well as districts have mandates over some aspects of water resources management. The MWE and other ministries and lead agencies and districts collaborate with private sector, NGOs/CSO and research institutions in water resource management. Currently, there are several institutions that are mandated to administer water at national, local and community levels (Annex 7).

3.3 The responsibility to protect water resources

Water sources protection is a responsibility of lead institutions for the bio-physical component of the water sources catchment, water users and stakeholders. The key stakeholders are Water Infrastructure developers (Government/Public sector bodies, Private sector, NGOs, CSOs and Faith Based Organizations (FBOs)) and Water Infrastructure Owners (Water Authority, Water User Committee, Electricity Generation Companies). The DWRM is responsible for regulating water use, coordinating water resources management activities and mobilizing stakeholders to contribute towards protection of water sources.

Protecting water sources from threats such as declining water quantities, pollution and siltation requires interventions that can be best implemented through institutional and stakeholder collaboration and sound technical and financial resources. In order to mobilize institutional and stakeholder commitments and guide the planning for technical and financial resources required to achieve water source protection, there is need to identify protection issues and appropriate interventions in a participatory approach. Such approaches would result into Water Source Protection plans with viable protection measures and options that stakeholders can understand, discuss, make decisions on and own. Water Source Protection plans may also include measures for managing water conflicts or balancing of interests between different groups, organizations and individuals whose activities depend on and affect the quantity and quality of water in a water source catchment. Lastly, should define institutional responsibilities and measures for stakeholder participation and collaboration during implementation of Water source protection plan.

Delivering effective Water Source Protection is a complex process requiring a mix of engineering solutions, training and behaviour change. To do this successfully, the stakeholders in the water source catchment are likely to need external support in terms of access to funding, training and technical advice on issues such as sanitation improvement, improved land management practices, among others. Where a water source catchment extends across more than one administrative unit (e.g., district), appropriate forums for joint planning and implementation of water source protection plans should be established within the framework for Catchment based Water Resources Management Strategy (2010) and Guidelines for Water Source Protection (2013).

3.4 Policy and legal frameworks

The principal policy and legal framework for the water resources in Uganda comprises: the Water Action Plan (1994), the Water Policy (1999); the Water Act (Cap 152), the (Water Resources) Regulations S.1 No. 152-1 and the Water (Waste Discharge) Regulations, S.1 No 152-4. In addition, there are sectoral policies, legislation and regulations such as those related to oil and gas, wetlands, mining, agriculture, transport, fisheries, wildlife, environment, forestry, public health, etc. that contribute towards or have implications on management or protection of water sources . Details about the legal, policy and institutional frameworks for water resources management are presented in Annex 7.

3.5 Technical considerations

The development of the Strategy took into account the following technical considerations:

a. **Stakeholder's interests**: Stakeholder engagement in the water source protection may be meaningfully achieved when such interests ranging from the direct effects of declining water quality and quantity and socio-economic opportunities for sustainable development are taken into account during the assessments and designing of the protection options. Additionally, active stakeholders engagement would be better realized when stakeholder needs are met.

b. **Data and information authenticity**: the strategies recognize the need for ensuring that the assessment of source protection issues (trends, effects, impacts) and analysis of protection options and development of protection strategies and actions are based on sound information.

c. **Ownership of source protection options and actions:** the identified Strategies and actions are cognizant that the over-all output should be a credible and widely accepted Strategy and Plan for contributing to water sources protection. Therefore, the strategies provide actions for stakeholder participation in assessing issues affecting water quality and availability and in defining the protection strategies as well as defining stakeholder contributions, roles and responsibilities in the implementation and monitoring of the performance and outcome of the Strategy.

d. **Stakeholder's capacity for contribute**: the Strategies recognize the diverse nature of stakeholders in the water resources management and the likely diverse nature of expectations about the source protection and Strategy and Plan. The diversity of these expectations is related to the various stakeholders' knowledge, interest and capacity to contribute within their policy and management processes.

e. **Credibility**: the Strategy recognizes the current Water resources development and supply planning and decision making processes and therefore the need to ensure that the strategy to contribute complies with the requirements of these processes, especially, stakeholder participation in providing financial and other forms of contribution, information, reviewing or endorsing Strategy. The Strategies and actions for compliance with the Water Sources Protection guidelines are elaborated.

3.6 Views from Stakeholders

Stakeholders identified the following factors that should be taken into account when mobilizing stakeholder's contribution:

a. **Recognizing mandates of stakeholders** in planning, managing, use and controlling financial resources and on how these mandates would relate to the Strategy and Plan.

b. **Recognizing stakeholder interests** in the water resources and water supply development process taking into account the differences in institutional policies and practices.

c. **Measures for feedback** to the various categories of the Stakeholders on the progress/process and outputs of the Strategy.

d. **Ensuring that synergies with planning processes** at district/local government and national levels are traced and elaborated.

e. **Building confidence among stakeholders** through consistence in approaches, respecting views and opinions of stakeholders, and, equitable participation and maintaining contacts.

3.7 Principles to apply in determining the level of contribution to Water Source Protection

All forms of water infrastructure defined in the Water Source Protection Guidelines 2013, namely; Piped Water, Point Source, Multipurpose Reservoirs, and Hydroelectric Power, are eligible to contribute to water source protection. Stakeholders' contribution shall apply the following principles:

a. Source protection encompasses a diverse range of issues and management interventions that may require financial resources that may or may not be adequately covered by 3% contribution only. In this regards, the 3% contribution is regarded as a "contribution" aimed at leveraging financial resources from other sources required for entire management interventions at the particular water source.

b. The contribution shall be applied to both capital development (infrastructure development) and recurrent (Operations and Maintenance – O&M) budget. Capital investment budgets will generate one-off contribution while O&M shall provide regular contribution during the lifespan of the infrastructure.

c. Contribution to Water Source Protection shall be independent of other water charges or fees (e.g., Water Permit, EIA fees, etc.) that may be imposed by Government from time to time. This is aimed at ensuring that the contributions are directly invested in water source protection activities and NOT captured as non-tax revenue that goes to the consolidated fund.

d. Climate effects on water sources shall be taken into account at all times.

e. The amount of contribution shall aim at being commensurate with the scope of water protection interventions presented in the Water Source Protection Plan. However, the scope of interventions varies from one water source to another or from time to time. This situation creates an inevitable shortfall or excess of funds generated from the 3% contribution, on case by case.

f. Water source protection generates benefits for water users, variety of stakeholders and environment protection. Therefore, the contribution by targeted stakeholders has a multiplier effect in the context of sustainable development.

3.8 Priority issues to consider in operationalizing the 3% contribution

The following are the priority issues for consideration in operationalizing stakeholder contributing to water source protection:

a. The formula for computing the contribution that addresses differences in water supply infrastructure and stakeholder operational policies and procedures. This consideration aims to ensure that the commitment and management of the contribution fits well within stakeholder mandates and policies.

b. The priority or eligible water source protection needs to be supported must be derived from the Water Source Protection Plan or participatory planning process that ensure ownership of priorities by stakeholders for that water source.

c. Mechanisms for collecting, managing and accounting for the Stakeholder contributions and supported activities should be developed and agreed upon by water sources stakeholders, including the contributing entity. It is preferable that such mechanisms are an integral part of the implementation arrangements for the Water Sources Protection Plan.

d. Mechanisms for monitoring or evaluating the performance and outcome of the contribution should be developed and agreed upon by water sources stakeholders, including the contributing entity. It is preferable that such mechanisms are an integral part of the implementation arrangements for the Water Sources Protection Plan.

3.9. Arrangements for water resources management

The Strategy recognizes existing decision making and water resources management platforms at central government, catchment and district levels. Such platforms include: Water Policy Committee, Catchment Management Committees, District Water Committees, among others. The Strategy seeks to utilize these platforms and devise other means of accessing stakeholders, as appropriate.

4 THE STRATEGIES FOR OPERATIONALIZING THE STAKEHOLDER CONTRIBUTION

The following sections present the Goal and Objectives of the Strategy, as well as the broad strategic interventions and results.

4.1 The Goal

The Long-term objective or goal of the stakeholder contribution to water sources protection is "To sustain supply of good quality and affordable water" for the socio-economic and livelihood needs. This goal will be realized through the objectives specified in subsequent section.

4.2 Objectives

The Goal for contributing to water sources protection will be realized through the following objectives:

d. To mobilize and sustain stakeholders contribution to water sources protection.
e. To enforce measures for ensuring an efficient and effective management and utilization of stakeholder contributions.
f. To protect water sources from threats to water quality and water quantity.

4.3 Results

A successful implementation of this Strategy will result into:

e. Enhanced Stakeholder commitment and participation in water sources protection.
f. Additional financial and technical resources for water sources protection.
g. Increased access to clean and affordable water.
h. Improvement in management of natural resources around water sources or within catchment of water sources.

4.4 Strategies for achieving the objectives of Stakeholder contributions to water source protection

The strategies for operationalizing the 3% contribution identify basis for computing contributions from new and existing water supply infrastructure, identifying priority interventions to be supported and mechanisms for collecting, managing and accounting for the contributions, as follows:

4.4.1 Strategy ONE: Computing 3% Contribution

4.4.1.1 Contributions from new water supply projects or new water users

The following factors shall be taken into account independently or collectively in determining the contribution.

a. Capital development budget being cost of the infrastructure design, construction and commissioning. This consideration targets water infrastructure of value of not less than UShs 100 million. This threshold is deemed adequate to generate substantial funds that support interventions that can create impact. However, on case by case basis, as in the case of large hydropower infrastructure, the computation may take into consideration the size of the infrastructure budget vis-a-vis the magnitude of prioritized source protection needs.

b. Actual costs for treating raw water to meet the water quality standards. This computation takes into account the relationship between costs for water treatment and level of pollution as attributed to water source.

c. Economic value (or volume) of the water utilized for commercial or public use. This computation takes into account the need to apply "economic incentives" in water sources protection. However, the application of this computation would require establishing the value of water in relation to the targeted economic use/activity.

Contribution from capital investment of capital investment of not less than USh 100 million shall be equivalent to 3 % percentage of following budget components as presented in the Water Supply Design Manual (2013)[2] (Table 1).

Table 1: Designated budget components (capital development) in Water Supply Design

Category	Cost item
All forms of Supply's (of value more than UGX 100,000,000)	Land acquisition, including assembly, holding and improvement
	Planning and feasibility studies (including preparation Water Source Protection Plan)
	Architectural and engineering designs
	Construction, including materials, equipment and labour

Source: Water Supply Design Manual (2013)

Contribution based on capital development budget amounts to a one-off contribution or series of contributions up to the time of commissioning the supply infrastructure. Such contribution provides funds suitable for investment into long term source protection interventions that would be periodically serviced by contributions from O&M of the same infrastructure.

4.4.1.2 Contributions from Operations and Maintenance costs of existing infrastructure

Contribution from O&M of supply infrastructure whose infrastructure value exceeds Shs. 100 million will be computed as 3 % of following budget components as presented in the Water Supply Design Manual (2013)[3] (Table 2). The priority budget components are associated with maintaining water quantity and quality as well as enhanced benefits from water use (volume used and economic use).

[2] The designated budget components are analyzed from the costs components defined in the Water Supply Design Manual (2013).

[3] The designated budget components are analyzed from the costs components defined in the Water Supply Design Manual (2013).

Table 2: Designated recurrent budget components in the Water Supply Design

Category	Cost item
All forms of Supply's (of value more than UGX 100,000,000)	Cost for water purification/quality control
	Cost for expansion of sustaining water quantity
	Revenue/bills paid (payment of water use based on volume)

Contribution based on O&M amounts to regular contributions for entire lifetime of the water supply infrastructure. The budget for water treatment reflects the quality of the water at source point at time of abstraction.

4.4.2 Strategy TWO: Strategies for prioritizing potential protection activities

The priority actions to benefit from the contributions towards the water source protection will be derived from the Water Source Protection Plans. Over-all, it is expected that the following categories of activities will feature among the priorities:

a. Sustainable land management activities (soil and water conservation, soil erosion control, farming practices).

b. Greening the water source or catchment e.g., through activities such as planting grass, afforestation, reforestation, landscape /habitat restoration.

c. Catchment management activities aimed at sustaining water recharge and retention capacities e.g., preparation of water source protection plans, conservation of wetlands, forests and aquifers, river bank management, water harvesting technologies, etc.

d. Pollution control e.g., non-point source pollution control, waste management, monitoring water quality, etc.

e. Enforcement and compliance monitoring activities e.g., costs of Water Source Protection or Management Committees, gazettement, fencing, etc.

f. Securing water source through acquisition of land around abstraction point and fencing such land, resettlement (where applicable).

g. Community mobilization and sensitization (awareness activities) in aspects of water source protection.

4.4.3 Strategy THREE: Strategies for managing and utilizing the contribution

Stakeholder contributions shall be collected and managed under any of the two arrangements described hereunder:

a. **Retention by Contributor**: Under this arrangement, Stakeholders shall be required to disclose information about the budget allocated, expenditures incurred, outputs/results achieved and future plans. Secondly, stakeholders shall be required to make financial and technical support towards the preparation of Water Source Protection Plans.

b. **Source Protection Fund:** stakeholders of particular water source may establish a Source Protection Fund where stakeholder contribution are deposited and managed as a pool.

For these arrangements to be successful, stakeholders for the water sources must agree on the model to apply and put in place measures for implementing the preferred arrangement. It is recommended that any agreed option must be integrated in the Water Source Protection Plan or other binding arrangement.

5. IMPLEMENTATION ARRANGEMENTS

5.1 Institutional roles and responsibilities

The institutional arrangements defining roles and responsibilities for a particular water source shall be derived from those arrangements described in the Water Sources Protection Plan. It is expected that the following institutional mandates shall inform the design of implementation arrangements during the preparation of Water Sources Protection Plans (Table 3)

Table 3: Institutional arrangements for implementing stakeholder contribution

Institution	Mandate	Responsibility
Policy guidance anD coordination		
WPC	Policy advice and harmonization	♣ Harmonize policies related to water source protection
MWE	Water Policy implementation	♣ Sector Policy coordination and compliance with the Strategy ♣ Integration of Stakeholder contribution into Water supply manuals and guidelines ♣ Monitoring implementation performance
JWESWG	Institutional Coordination	♣ Monitor stakeholder contribution (through sector plans, budgets, reports)
Technical oversight and support		
DWRM	Strategy Implementation	♣ Technical support (Water Source Protection Planning and implementation) ♣ Mobilizing stakeholder contribution ♣ Monitoring and reporting performance of the contributions ♣ Enforce and monitor compliance with the Strategy
Lead Agencies (DWD NEMA, DEA, NWSC, Districts)	Technical support	♣ Technical support (Water Source Protection Planning and implementation). ♣ Mobilizing stakeholder contribution ♣ Monitoring and reporting institutional contributions and performance of the contributions
CMOs/Water Boards	Implementation	♣ Mobilize stakeholder contribution ♣ Prepare/facilitate Water Source Sources Protection Plans ♣ Oversee implementation of Source Protection plans and supported activities ♣ Monitor compliance with the Strategy and Source Protection Plans
Stakeholders (developers, operators, water users)	Implement the strategy	♣ Prepare and implement Water Source Sources Protection Plans ♣ Effect the Stakeholder contribution obligation ♣ Oversee implementation of Source Protection plans and supported activities ♣ Monitor compliance with the Strategy and Source Protection Plans

Lead agencies responsible for managing environmental and or land based activities affecting water sources (e.g., forestry, wetlands, rangelands, river banks and lake shores, land, agriculture, housing, population, road infrastructure, hydropower generation, etc.) are required to provide technical leadership and policy guidance and take lead in implementing priority water sources protection interventions that fall under their mandates. This requirement will ensure that water source protection activities remain integral components of their mandate and programmes.

5.2 Success factors

The implementation of this Strategy faces risks and uncertainties that could render it ineffective. Risk is defined as the level of exposure to uncertainties (both opportunities and threats) that the Stakeholders contributing to water source protection must understand and effectively manage in order to achieve protection objectives and create value. Risk management is a process involving identifying and sourcing risk, evaluating and prioritizing risk and, managing and mitigating risk.

The following risks have been identified:

e) Maintaining the balance between core business (mandate) of Stakeholders and participation in implementing water sources protection plans or supported activities.

f) Demonstrating good leadership and accountability in order to sustain the credibility of the Strategy and management of the contributions.

g) Demonstrating value addition through quality service and products.

h) Sustaining contributions since the collaboration and participation require sustained commitment and may involve substantial financial and technical resources.

The following measures will be applied in order to ensure success and sustainability of funding for water source protection:

g. **Mandatory contribution:** the contribution to water source protection shall be mandatory for all stakeholders and water users define din the Source Protection Guidelines.

h. **Integrating contribution into capital development budget:** This measure aims at ensuring that budgets for new water infrastructure incorporate the stakeholder contribution towards water source protection. The implementation of this measure requires that water infrastructure developer(s) includes this contribution as part of the budget for capital development.

i. **Integrating budget for water sources protection into conditional grants:** This measure aims at “ring-fencing” water source protection contribution within the conditional grants to districts and ensuring that such funds are utilized for the intended purpose.

j. **Integrating contribution in recurrent expenditure (O&M):** this measure aims at ensuring regular contributions towards water source protection are integral components of the O&M budgets of water infrastructure.

k. **Strengthen enforcement tools:** through the following measures:

   iv. Upgrading Water Sources Protection Guidelines into "Regulations" so as to strengthen their legal enforcement force. This measure would be considered by the MWE at macro level (Water and Environment Sector) and process it through established procedures.
   v. Incorporating provisions for contribution to Water Source Protection in the MoUs or Performance Contracts with Local Water Authorities or Operators.
   vi. Incorporating provisions for contribution to Water Source Protection among the Standard condition of the Water Permits and EIA Certificates.

l. **Compliance:** this measure aims to ensure that stakeholder obligations are met and the generated funds are utilized in accordance with the approved Water Source Protection Plans. This measure will be realized through applying an effective Monitoring system applicable at policy by Water Policy and MWE, sector level by Water and Environment Sector Working Group, and at catchment levels by DWRM (WMZ Offices), as appropriate. The following incentive measures will be applied to achieve compliance:

   vii. **Water Sources Protection Plans:** All water source protection activities shall be defined in the Water Source Protection Plans developed and approved in accordance with the procedures defined in the Water Source Protection Guidelines. All contributions shall be utilized solely for the implementation of actions prioritized in the Water Source Protection Plan.

   viii. **Communication and creating awareness:** this measure entails wide publicity of Water Source Protection Guidelines and Stakeholder contribution Strategy across all sectors and all levels, including private sector so as to ensure that their existence is known and their application is well understood. This is a responsibility of DWRM.

   ix. **Transparency and Equity:** to enhance ownership and compliance with the requirements, all assessments, contributions and use of the contributions shall be done in a transparent manner, including full disclosure of the information on the assessment, contributions, use of the contributions and changes or improvements accruing from the contributions.

   x. **Participation in decision making:** Stakeholder shall participate in decision making platforms regarding the use of funds or in-kind contribution. Contributions shall be managed and accounted for in accordance with the financial management procedures provided in the approved Water Source Protection plan or other binding measure agreed upon by stakeholders.

xi. **Complementarities:** designing and applying planning and implementation tools that ensure that water source protection activities supported by the stakeholder contributions compliment running and previous programmes of various stakeholders in the water source catchment.

xii. **Mobilize water users and water source stakeholders**: to appreciate the risks and benefits of poorly managed or neglected water sources that in turn undermine continuous water supply in good quality and quantities.

6. Annex's

6.1 Annex 1: Trends in water treatment inputs due to pollution (NWSC)

Trends in water Treatment inputs due to pollution (NWSC: GABA water infrastructure)

YEAR	EVENT	TREATMENT PROCESSES	CHEMICAL
1930	Gaba 1 was commissioned	Filtration	No Chemical treatment
1962	Gaba I upgrading due to increased Algal bloom in the Lake	Micro strainers introduced	
1980	Gaba I upgrading due to increased pollution in Lake	Micro strainers decommissioned, disinfection introduced	Chlorine
1993	Gaba II commissioned	Flocculation, sedimentation, disinfection	Alum, chlorine
2004	Gaba I upgrading	Pre-chlorination, clarification, pH correction	Chlorine
2007	Gaba III commissioned	Pre-chlorination, Flocculation, sedimentation, disinfection	Alum, Soda Ash, chlorine

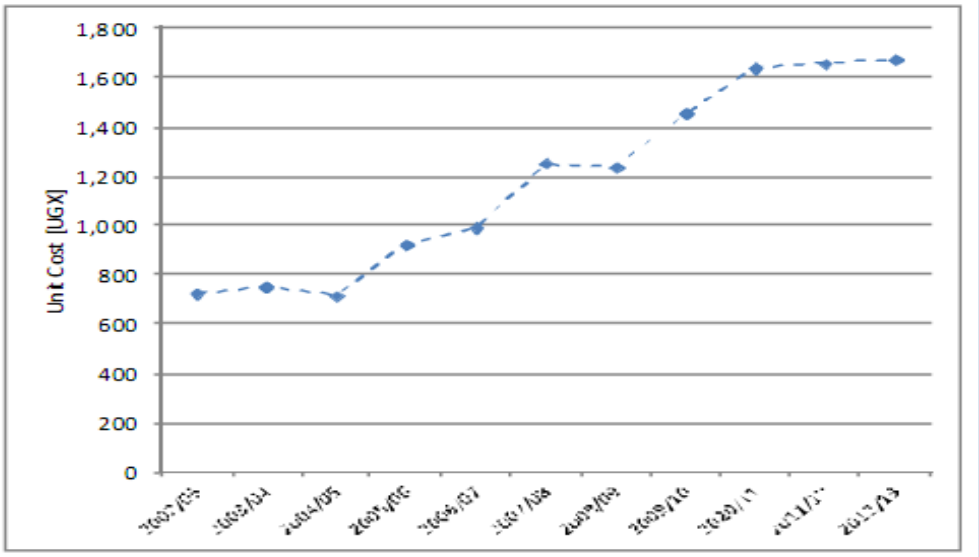
This information illustrates increased treatment inputs, especially chemical usage. Other attendant inputs that have increased due to declining quality and quantity of water in the catchment include: i) cleaning the filters, ii) electricity used to pump extra raw water, and cleaning the clarifiers and sedimentation tanks, iii) electricity used for dosing the chemicals and, iv) replacement of dosing and other equipment due to increased rate of tear and wear. **Source: NWSC (2014)**

Trends in cost of ensuring adequate water supply – NWSC: GABA

The levels of Lake Victoria have dropped by more than 2 metres over the last few decades, with the more noticeable decline in the last fifteen years. In 2005/6, the Lake Victoria water levels dropped by approximately 1.6m. This drop in water levels resulted into reduction of the depth of intake of Gaba II water treatment plant (WTP), down to scarcely 1 ½ m below the original levels of water in the lake and the intake of the raw water suction pipes got exposed and intake air borne and emergency works to rescue the situation had to be carried out. In order to avert the likely future costs that would arise due to airborne and emergency works when water levels continue to fall, Euros 2,193,000 was projected to become the cost of extending abstraction point 1.4km from the water treatment complex into the Murchison bay in order to be abstract raw water at a depth of 8m below the water surface. **Source: NWSC (2014)**

National trends in Unit cost of production of Water by NWSC (FY 2002/03-2012/13)

The Unit cost has steadily increased from UGX 670 in 2002/03 to UGX 1,650 in 2012/13 (Figure 1)
Figure 1: Trends in Unit cost of production by NWSC



Source: Sector Performance Review Report (2012/13)

6.2 Annex 2:Cost of water treatment from sample stations by NWSC since 2011

	Date	Qty of Raw water (m3)	Qty of treated water (m3)	Alum (kg)	HTH (kg)	total cost alum US $)	Total cost HTH (US $)	% of cost/treated water	Average
Arua	Piped water supply								
	2011	733,344	667,424	57,150	2,185	25,718	4,152	0.622%	0.53%
	2012	785,284	732,260	68,850	2,115	30,983	4,019	0.549%	
	2013	524,139	801,387	78,700	1,750	35,415	3,325	0.415%	
Soroti	Piped water supply								
	2011	928,700	913,729	29,550	3,912	13,298	7,433	0.813%	0.02%
	2012	947,920	929,984	12,750	2,845	5,738	5,405	0.581%	
	2013	1,028,568	1,071,751	6,000	2,618	2,700	4,974	0.464%	
Tororo	Piped water supply								
	2011	1,373,225	1,307,948	152,000	7,584	68,400	14,410	1.102%	0.70%
	2012	1,494,122	1,297,464	156,700	3,176	70,515	6,034	0.465%	
	2013	1,504,151	1,444,942	53,910	4,160	24,260	7,904	0.547%	
Hoima	Borehole								
	2011	346,622	338,778		1,007		1,912	0.564%	0.52%
	2012	422,242	492,710		1,144		2,173	0.441%	
	2013	366,853	338,778		1,007		1,912	0.564%	
Gulu	Piped water supply								
	2011	346,907	317,594	6,500	734	2,925	1,395	0.439%	2.27%
	2012	1,195,357	1,110,567	58,470	2,864	315,738	65,299	5.880%	
	2013	1,421,703	1,405,630	71,150	3,539	32,018	6,724	0.478%	

Source: NWSC (2014)

The above information reveals increasing trend in costs for water treatment statistically. However, overall, the cost of water treatment is higher than expected thus significantly contributing to the high costs of delivering water to the consumer. Secondly, the average cost of treatment is 0.8% of the volume of treated water for the five towns which is high.

6.3 Annex 3: Cost of water treatment from sample stations (Water Scheme – Deep Wells) by Central WSDF in 2013/14.

T	Production	Billed	Running costs (USHS "000")							
	m3	m3	Electricity	Transport	Staff	Servicing	Repairs	Total	0.80%	3%
Bukomansimbi	11,351	10,491	6,496	1,200	7,180	260	1,220	16,356	130,848	490,680
Kangulumira	26,433	20,282	3,198	917	8,610	1,400	3,118	17,243	137,944	517,290
Nakifuma	14,389	14,146	5,604	1,265	6,050	0	2,761	15,680	125,440	470,400
Kasinge	0	0	5,698	0	5,735	1,115	0	12,548	100,384	376,440

Source: WSDF (Central)

On average, it costs approx Shs 1,061 of running costs per $1m^3$ of water. In terms of contribution, the O&M budget/costs would generate Shs 463,703 per annum when a 3% formula is applied.

With regards to declining water quantities, it becomes expensive to periodically shift abstraction points or drill a deeper borehole. Box 4 below presents an example of NWSC whereby the cost of water supply attracted high cost of shifting abstraction point at Ggaba and Jinja in 2006.

Estimated costs of shifting abstraction point at Ggaba and Jinja water works in 2005/6.

Ggaba Offshore pipeline: According to a study done in October 2005 by NWSC, the most feasible point of abstraction of raw water for the Ggaba project is 1.4 kilometres from the water treatment complex into the Murchison bay, at a depth of 8 metres below the surface. In 2005, the estimated cost of implementing the project was Euros 2,193,000/-. **At that point, 3% contribution would amount to Euros 65,790.**

Jinja Offshore Pipeline: The Abstraction point of the proposed intake will be 8 metres below the lowest lake level and 1.3 kilometres from the shore. The estimated project cost in 2006 was Euros 1,678,359.39/-. **At that point, 3% contribution would amount to Euros 50,350.**

Source: NWSC

The above two scenarios are presumed to be closely linked to the bio-physical condition of the water sources. The bio-physical conditions are influenced by man-induced changes in the immediate environment of the water sources as well as climate change effects on catchment as a whole.

6.4 Annex 4: literature Reviewed

Brauman et al. 2007; The Nature and Value of Ecosystem Services: An Overview Highlighting Hydrologic Services

CTIC 2006; Getting Paid for Stewardship: An Agricultural Community Water Quality Trading Guide

Cuauhtémoc León, et al (2013); PES in Mexixo

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Perrot-Maître and Davis 2001; Case Studies of Markets and Innovative Financial Mechanisms for Water Services from Forests

Tracy Stanton, et al (2010); State of Watershed payments- An emerging market place.

6.5 Annex 5: List of People/Institutions consulted

6.5.1 Consultations Face to Face

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6.5.2 Focused Group Discussions

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6.6 Annex 6: Experiences of Catchment or watershed protection from outside Uganda

a) Payment for Ecosystem Services – Example from South Africa

Payments for ecosystem services (PES), also known as payments for environmental services (or benefits), are incentives offered to farmers or landowners in exchange for managing their land to provide some sort of ecological service. PES is a voluntary transaction in which a well-defined environmental service or a form land use likely to secure that service is paid for by a buyer from a supplier on condition that the suppler continues to supply that service. An Example is illustrated below:

Example of PES from South Africa

SABMiller, one of the largest global brewers and beverage companies (group revenues in 2012 exceeded $31 billion) employs a "beyond-the-breweries" approach to managing water quality and supply and reducing water conflicts.

In Bogotá, Colombia, SABMiller subsidiary Bavaria faced increasing water quality problems from deforestation and land clearing in mountainous areas upstream. Since 2009, Bavaria has supported a water fund led by The Nature Conservancy which pays agricultural producers to move cattle off of steep slopes (to limit erosion), switch to more ecologically friendly farming practices, and replant degraded areas. The company has paid $240,000 into the fund so far and estimates that watershed protection efforts are cutting water treatment costs in the supply area by $458,000 each year.

In South Africa, climate change and water-guzzling invasive plants posed major risks to the supply chain. With a projected decline in surface water supplies of 41% by 2032, shifting to groundwater pumping to meet water needs would cost the company at least $700,000 a year. SABMiller found that for the same amount of money, it could invest in clearing invasive plant species through partnerships with public works program "Working for Water" and biodiversity stewardship agreements. These actions also created an additional 50 jobs per year in the catchment and boosted South African Breweries' reputation locally.

Source: Kissinger, 2013.

b) Payment for Water Services (PWS) – Example from China

According to the compensation methods, major approaches were divided into compensation in cash, compensation in kind, compensation via appropriate policies and compensation via appropriate technologies and knowledge. Implementation bodies and their operational schemes are key in determining the chief characters of compensation methods, which can generally be categorized into two types: government compensation and market compensation.

a. **Government compensation**: The government compensation scheme is currently the most important and easily implementable type in China. The government identifies who should be

compensated and how much should be paid by taking the provision and protection of ecosystem services into account. It aims to ensure national ecological security, social stability and regionally coordinated development, and adopts the financial subsidy, policy support, project implementation, taxation reform and talent input as the compensation methods. The government compensation scheme includes financial transfer payment, policy support with regional differences, ecological protection projects and an environmental taxation system.

b. **Market compensation:** The objects of market compensation could be the property of the ecological and environmental elements, ecosystem services or the performance or quota of the environment pollution treatment. Pigou (1932) theorized that market schemes, such as taxes and subsidies, could be used to align private and social costs and benefits in a society more closely. In practice in China, the government usually provides subsidies to those who protect ecosystems, for instance, by providing subsidies to farmers for converting their land from farmland into grassland and forest. The specific amount of subsidies may be based on economic loss from farming products, e.g., total income from selling harvests from farmland. Meanwhile, taxes are collected from developers on the basis of the total turnover from selling the products, e.g. from mining activities.

Although it follows the same theoretical basis, eco-compensation in China is a broader concept than PES because it has a built-in penalty concept. The unique characteristics of PES in China are summarized as: (1) the government domination of PES with a focus on institutional and policy aspects to determine compensation schemes; (2) a lack of a real marketing mechanism due to low marketization, and externality cannot be totally solved by pure market instruments; (3) top-down approach of implementing PES; and (4) adoption of the penalty concept by setting, for instance, the "damager pays principle," and so on.

c) Payment of Catchment Services (PCS) – Example from Kenya

These are voluntary schemes linking upstream land use and management with downstream water use and management to realize benefits for upstream and downstream participants in the scheme and others in the area including, the environment.

Green Water Credits (GWC) in Kenya

Over the last two and half decades, most of Kenya's cropland has lost its topsoil, while the population has doubled, boosting demand for power and water. Green water credits (GWC) offer a tried and tested means of providing Kenya with food, water and power security. GWC are payments or rewards for water and land management services provided by farmers, which in turn benefit downstream users by providing them better-quality water and a more reliable supply. World Soil Information (ISRIC) will begin a full-scale GWC project in the near future (Proof-of-Concept of a Global Mechanism to Pay Rainfed Land Users for Water Management Activities), based on extensive testing and piloting in Kenya.

In the GWC proof of concept, focus groups were organized to give voice to land users. Water user groups and other institutions in the sector shared their views of existing institutional capacities.
Much was learned from these sessions and filtered into the current project design. Leaseholds were identified as one of the best means of providing GWC participants with secure land tenure, in order to ensure that the project is pro-rural-poor. In addition, the Kenyan hydroelectric company, KenGen, was

identified as an ideal GWC partner: they have a clear incentive to pay, a long-term commitment to the scheme, and the financial resources needed.

The project's policy will be to encourage group rather than individual participation, and the Government of Kenya has attempted to decentralize water provision and operation and maintenance responsibilities, while providing an enabling policy and regulatory environment.

The promise of GWC Kenya can be measured anecdotally by the Government's desire to scale it up to the national level. This does not testify to the scheme's pro-poor impact (which will have to wait for eventual assessment), but it does indicate the demand for such an approach.

6.7 Annex 7: Institutional Mandates

A: INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES MANAGEMENT

The institutional framework for the management of water resources entails management at five levels, namely, 1) national level (centre), 2) district level, 3) water management zone level, 4) catchment level, and 5) community level. The lead institution is the Ministry of Water and Environment (MWE). The Water Policy Committee inter-ministerial and inter-sectoral coordination body advises the Minister of Water and Environment on policy level water resources management and development issues. Several government ministries, agencies, and semi-autonomous or private institutions and NGOs/CSOs are directly or indirectly involved in the management of the water resources. At the central government level water policies, regulations and water action plans and strategies are formulated, enforced and monitored, while at lower levels (districts, water management zones and catchment management organizations, communities institutions and water user organizations) water use and protection interventions are implemented.

Currently, there are several institutions that are mandated to administer water at national, local and community levels (see Figure 6.1).

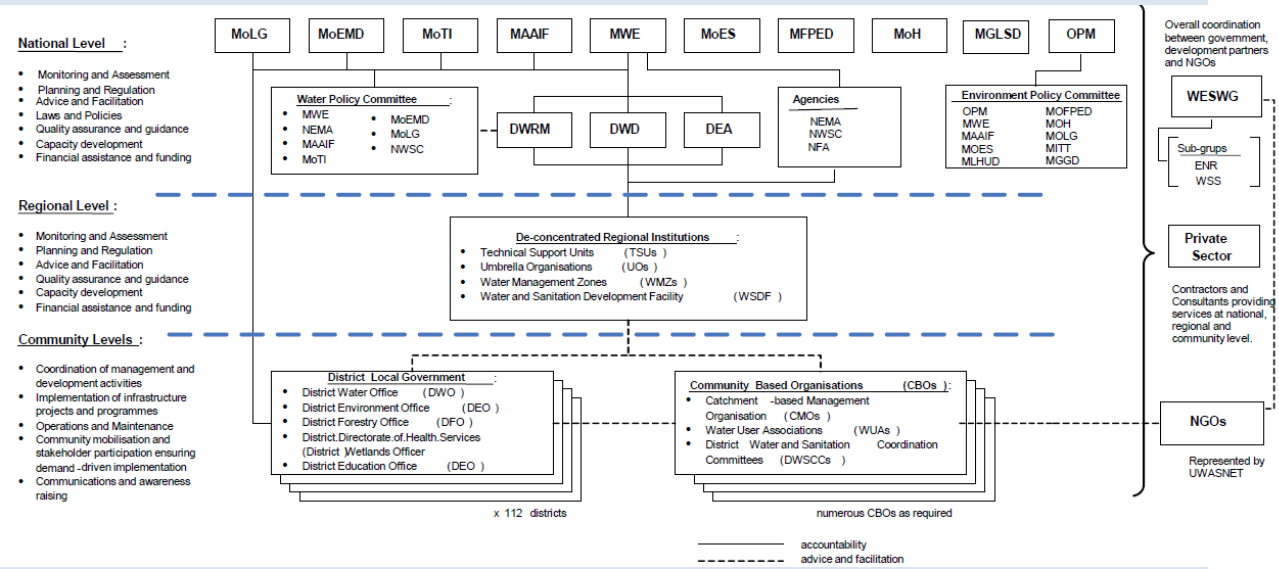

Figure 6.1: Institutional Setup of the Water Sector (November 2012); source JWESSP page 3

B: THE MANDATES OF CENTRAL GOVERNMENT MINISTRIES AND AGENCIES

a) The Water Policy Committee

The Water Policy Committee (WPC) advises the Minister in charge of water resources on water policy, standards for service delivery, and priorities for water resources management. It also advises on revisions to

legislation and regulations for water resources, and also coordinates formulation of international water resources policy.

b) The Ministry of Water and Environment

The Ministry of Water and Environment has the overall responsibility for setting national policies and standards, managing and regulating water resources, and determining priorities for water development and management. It also monitors and evaluates sector development programs to keep track of their performance, efficiency, and effectiveness in service delivery.

The Ministry has the following three directorates:

i) The Directorate of Water Resources Management (DWRM)

The overall mandate of DWRM is *"To promote and ensure rational and sustainable utilization, effective management and safeguard of water resources so that there is water of adequate quantity and quality to meet the social welfare and economic development needs of Uganda".*

DWRM comprises three departments namely: Department of Water Resources Monitoring and Assessments, Department of Water Quality Management, and Department of Water Resources Regulation. The latter contains the Trans-boundary Water Resources Management Division which promotes trans-boundary regional cooperation for equitable and reasonable utilization of the shared water resources of the Nile and Lake Victoria basins through active participation in the Nile Basin Initiative (NBI) and the Lake Victoria Basin Commission (LVBC) programmes and activities, as well as other international water resources management programmes.

DWRM is responsible for monitoring, assessing, allocating and regulating water resources through the issuance of water abstraction and wastewater discharge permits. It also coordinates Uganda's participation in joint management of trans-boundary waters resources and peaceful cooperation with Nile Basin riparian countries. It issues water abstraction permits to the Water Authorities and waste discharge permits for those towns with sewerage, and monitors compliance with the permit conditions. It also provides on demand services related to water quality as the case may be. It may also move in to provide emergency water quality surveillance to guide the operations of water systems during periods of emergency e.g. algal bloom as in Lake Victoria, water hyacinth invasions, epidemics and floods. DWRM at central level does not link with districts directly but links with them through the Water Management Zones (WMZs).

Some of the water resources management functions of DWRM have been de-concentrated to Water Management Zones (WMZ) as a way of moving closer to the stakeholders. The country has been divided into four WMZs (Victoria, Albert, Kyoga and Upper Nile) based on hydrological basins and this is a regional level top-down framework through which water resources are being managed and developed. Currently, there are four WMZ Offices responsible for the four WMZ. The WMO are managed by DWRM personnel who have been assigned from headquarters and posted to the WMZ level. The WMO offices were established to implement the IWRM and the mandate of DWRM. They are supported by Steering Committees, Technical Advisory Committees, and Catchment Management Committees who provide a steering and coordination role in the implementation of the strategies and plans at the catchment scale.

Within the WMZ there are Catchment Management Organizations (CMOs) which are based on water sub-basins or catchments. CMOs are organized and managed by the stakeholders, including the local governments and other stakeholders, and form structures for effective management including a Secretariat. They are the local level bottom-up frameworks through which stakeholders will participate in water resources

management. Districts are the lowest level institutions where implementation of catchment based water resources management plans will be implemented.

The CMO are facilitated by DWRM and WMZ levels to get organized but are not a structure of the Ministry of Water and Environment. The WMZ staff offer technical advice and exchange of information and reports, and are members of the CMO and forums.

ii) The Directorate of Water Development (DWD)

The DWD is responsible for regulation of water services and for providing the overall technical oversight for the planning, implementation, and supervision of the delivery of urban and rural water and sanitation services across the country, including water for production. It provides capacity development and other support services to Local Governments, Private Operators and other service providers. DWD fulfils its responsibilities through three departments: Urban Water and Sewerage Department; Rural Water Supply and Sanitation Department, and the Water for Production (WfP) Department.

iii) The Directorate of Environment Affairs (DEA)

The Directorate of Environment Affairs is responsible for promoting and ensuring rational and sustainable utilization, development and effective management of the environment for socio–economic development of the country. Of special relevance for the water sector is the Meteorology Department, which will be transformed into the Uganda National Metrological Authority established under the Uganda National Meteorological Authority Act 2012. The authority will be responsible for collecting, analyzing, and disseminating meteorological data. Mechanisms for real time data exchange between the Meteorology Department and DWRM should be established to facilitate the latter in its role, particularly on interventions for flood and drought forecasting and early warning systems.

C. SECTORAL MINISTRIES INVOLVED IN WATER RESOURCES MANAGEMENT

The following sectoral ministries play important roles in the water resources management in Uganda:

a. The Office of the Prime Minister is the convener of the Environment Committee which is responsible for harmonizing and coordinating sector policies in relation to environment management and water resources and also disaster management (floods).

b. The Ministry of Health (MoH), in particular the Environmental Health Division (EHD) is the lead agency in hygiene and sanitation promotion and is responsible for providing overall policy and technical oversight for planning, implementation, and supervision of hygiene and sanitation promotion in the country.

c. The Ministry of Education and Sports (MoES) is responsible for planning, implementation management, and monitoring of school sanitation improvements. It also develops human power and raise awareness.

d. The Ministry of Local Government (MoLG) oversees the implementation of Local Government Development Plans that also includes water supplies and improvement of hygiene and sanitation in institutions and public places.

e. The Ministry of Gender, Labour and Social Development (MGLSD) assists the water sector in gender responsive policy development. It also provides employment in water based activities, equity and access to water resources, community development.

f. The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is responsible for agriculture, "on-farm" activities in respect of irrigation, livestock, and fisheries/aquaculture. It is responsible for regulating agro-pesticides, chemicals and fertilizers and invasive plants and animals.

g. The Ministry of Trade, Industries and Cooperatives (MTIC) is responsible for licensing trade. For example it licenses mineral water processing factories. It also licenses industries in relation to water use and waste management.
h. The Ministry of Energy and Mineral Development (MEMD) is responsible for hydropower generation, mining, and oil and gas exploration and production. It plans for the implementation of hydropower infrastructure in collaboration with DWRM.
i. The Ministry of Works and Transport (MoWT) is responsible for policies and regulation of water transport as well as development.
j. The Ministry of Finance, Planning and Economic Development (MFPED). It is the key Ministry for economic development/macroeconomic development and it is responsible for mobilizing and financing investments in water resources development and management. It is responsible for the development of the National Development Plan and Vision 2040.
k. The Ministry of Foreign Affairs (MoFA) plays a lead role in negotiations over international waters, in particular the use of the Nile waters; in development of trans-boundary projects on Lake Victoria and the Nile with neighboring countries, and in development of institutional frameworks for management of trans-boundary waters.
l. The Ministry of Justice and Constitutional Affairs is responsible for analysis and advise on legal matters pertaining to the country's cooperation with other riparian states.
m. The Ministry of Tourism, Wildlife and Antiquities plays a role in regulating water based tourism.
n. The Ministry of Land, Housing and Urban Development plays role in land use policy and planning, settlement and physical planning.
o. The Ministry responsible for Kampala City is responsible policy/political management of KCCA which include functions of City planning and development.

D. THE MANDATES OF STATUTORY BODIES

a) The National Water and Sewerage Corporation (NWSC)

The NWSC is a parastatal under MWE that operates and provides water and sewerage services for 23 large urban centres across the country including Kampala City. It is essentially a Water Authority for providing water and sewerage services in accordance with the Water Act Cap 152 and the subsequent regulations governing water supply and waste disposal.

b) The National Environment Management Authority (NEMA)

NEMA is a parastatal under MWE responsible for management of the environment in accordance with the National Environment Management Act Cap 153 and its subsidiary regulations. NEMA compliments the efforts of DWRM and DWD in the regulation of water resources management and development especially the regulation of effluent wastes. It has delegated it functions for waste discharge to DWRM. It is responsible for approving developments/EIA, monitoring environmental & water quality, environmental planning, and management of water biodiversity.

c) National Forestry Authority (NFA)

NFA was established by the National Forestry and Tree Planting Act 8 of 2003. It is responsible for the management of central forest reserves and thus has an important role to play in the management of forested catchment/watershed.

d) Uganda Wildlife Authority (UWA)

The Uganda Wildlife Authority is established by the Uganda Wildlife Act Cap 200. It is mandated to manage all natural resources in the national parks, game reserves, and wildlife conservation areas. It is therefore important in the management of water based biodiversity and tourism.

e) Uganda Investment Authority

The Uganda Investment Authority (UIA) is a semi-autonomous government agency established by the Investment Code Act, Cap 92. It operates in partnership with the private sector and Government of Uganda to drive national economic growth and development. It issues investment licenses to investors that have projects that use water resources.

f) National Planning Authority (NPA)

NPA was established by the NPA Act 15 of 2002. It is mandated to produce comprehensive and integrated development plans for the country elaborated in terms of the perspective vision, and long- and medium-term plans. It is also responsible for overseeing the implementation of the five-year National Development Plan (NDP) and Uganda's new development blueprint dubbed Vision2040. Thus there is need for coordination with NPA to implement the Water Resources Strategy.

g) National Fisheries Resources Research Institute (NFRRI)

The NFRRI is one of the six Public Agricultural Research Institutes of Uganda established by the National Agricultural Research Act 2005. It is charged with conducting basic and applied research of national and strategic importance in capture fisheries, aquaculture, water environment, socio-economic and Marketing and Information Communication Management and emerging issues in the fisheries sector. It is also required to generate the knowledge based, develop and disseminate fisheries technologies and information for increased but sustainable fish production, conservation of the fisheries genetic resources, water quality and fish habitat, and to develop and manage the research and required linkages with stakeholders in order to enhance the contribution of fisheries research to increased and sustainable fish production and conservation of the natural resource base.

h) Uganda Industrial Research Institute (UIRI)

UIRI was established by the Uganda Industrial Research Institute Act, 5 of 2006. It is Uganda Government's lead agency for industrialization, established under the auspices of the Ministry of Trade Industry and Cooperatives (MTIC). It is the country's main vehicle for implementing strategies and measures aimed at transforming industry in Uganda. It is responsible for undertaking applied research and to develop and/or acquire appropriate technology in order to create a strong, effective and competitive industrial sector in Uganda. It is therefore important in industrial development strategies related to water resources.

i) *Uganda National Meteorological Authority*

The Uganda National Meteorological Authority Act, 2012, established an Authority. One of its functions is to apply meteorology to water resources management. This Authority will play an important role in providing meteorological information for water resources management, and flood and drought predictions and monitoring, and early warning.

E. MANDATES OF LOCAL GOVERNMENT

District Water Officers (DWO) in the Local Governments are key stakeholders in catchment-based IWRM. Their specific responsibilities include to:

a. Enact and enforce policies, ordinances and bye-laws related to IWRM, and wise use and sustainable management of water and environmental resources;
b. Participate actively in the development and implementation of catchment management plans for the river/lake basins;
c. Promote integrated planning in management of land, water, and environmental resources; promote and facilitate the mainstreaming of IWRM into district and town development plans, district environmental action plans, investment plans, and other relevant plans;
d. Carry out monitoring and evaluation of IWRM activities in their respective areas;
e. Raise public awareness within their jurisdictions on water and environmental issues;
f. Encourage and increase stakeholder participation in the integrated management of water resources;
g. In collaboration with DWRM/WMZ, resolve conflicts related to use of the water resources.

The DWOs ensure that relevant data collected by Water Authorities and private drillers on water levels and quality will feed into the DWRM data bank for planning and monitoring purposes.
The District Environmental Officers (DEOs) ensure wetlands which are important in the water resources management chain are not abused; and that planned and on-going water and sanitation activities meet the requirements of the relevant environmental laws and regulations.

DWO also play a role lobbying district councils for issuance of bye-laws related to appropriate management and conservation of water and environmental resources in the catchment.

F: PUBLIC AND PRIVATE SECTOR PARTICIPATION

a) Water and Sanitation Committees, Water User Groups, and Water User Associations

The Water Act provides for the formation of Water and Sanitation Committees, Water User Groups, and Water User Associations, as local community level organizations, to ensure the sustainability of the water supply and sanitation facilities through proper management, operation and maintenance by the user communities.

b) Local Communities

Local Communities are responsible for demanding for water supply and sanitation (WSS) facilities, its planning, making cash and in-kind contributions (land, labour, materials etc), and participating in the implementation, operation and maintenance of most rural WSS facilities. Upon construction of a water source, a Water Users Committee (WUC) is usually established to take responsibility for its operation and maintenance.

Communities are also operating and maintaining point sources in peri-urban areas. A Water User Committee is established at each water point. The role of communities should shape demand management as opposed to supply management of water in their respective areas. Communities ideally address their concerns through PO's and WSSB's.

c) Non Government Organizations (NGOs)/Civil Society Organizations

NGOs and CBOs have important functions in the implementation of IWRM such as activities related to protection of water supplies like maintaining tree or grass cover in the catchment area of water sources, reducing stream pollution and abstractions, resolving conflicts from sharing of water, water supply (for

example gravity flow schemes), water harvesting (water conservation and efficient use technologies), awareness, catchment/watershed management, and community mobilization and citizen participation.

d) Private Sector

The private sector is responsible for the development of mini-hydropower dams and irrigation schemes, and for establishment value addition to water such as mineral water.

G. PLANNING AND COORDINATION MECHANISMS IN THE WATER RESOURCES SECTOR

Water resources management is a multi-sectoral activity that requires joint planning and coordination. Planning and coordination mechanisms enhance information sharing, keeping stakeholders aware of sector problems, and ensure joint funding.

a) Planning

Planning for water resources has to be done in accordance with the following existing documents:

National Planning documents: Uganda Vision 2040& National Development Plan;

Sector planning documents: Water and Environment Sector Investment Plan (WEISP); National Water Action Plan;
Related Sector/subsector plans: Energy Master Plan, Fisheries Master Plans, Environment Action Plan& Tourism Master Plan, etc.

b) Coordination

Coordination for water resources management has to done with the following institutions:

i. Water Policy Committee;
ii. Top Policy management in MWE;
iii. Directorate and Department levels;
iv. Water and Environment Sector Working Group (WESWG);
v. Sector Reviews (Joint Sector Reviews, Joint Technical Reviews)

c) Joint Sector Management and Coordination Tools

The Joint Sector Review (JSR)

The Joint Sector Review (JSR) is a forum for performance assessment, and budget and policy guidance. Presentations and contributions are guided by a Sector Performance Report and a pre-determined theme originating from emerging policy issues. The event allows a broad spectrum of stakeholders to get an insight into, discuss, and influence sector developments.

The Joint Assessment Framework (JAF)

The Joint Assessment Framework (JAF) is the framework for the Government of Uganda and Development Partners (DPs)' General Budget Support and Sector Budget Support. The ENR Sub-Sector will use the newly adoptedSector Performance Measurement Framework (Platinum Indicators) to establish baselines and measure progress.

Joint Water and Environment Sector Support Programme

The objective of the JWESSP is to support the water and environment sector to achieve its targets and improve its efficiency through a consistent, harmonised sector programme that is aligned to government objectives, policies and delivery modalities. JWESSP support will thus be fully in line with the goals and targets of the National Development Plan (NDP, 2010/11 to 2014/15), Uganda's overarching national planning framework. The JWESSP will be the core framework for joint support in the context of a Sector-Wide Approach (SWAP) for the Water and Environment Sector. It is the most significant donor support to the water and sanitation sub-sector – with the exception of water supply and sanitation in large towns under the NWSC. It is important to note the proposed Joint Water and Environment Sector Support Programme 2013-2018, which for the first time will support both sub-sectors within the Ministry's mandate, including Water, Environment and Climate Change.

d) Stakeholder/Public Participation

The Water and Environment Sector Working Group (WESWG)

The WESWG is a forum that comprises of the Ministry of Water and Environment, line Ministries, development partners, representatives of NGOs and private sector active in the sector and is responsible for sector coordination, monitoring and approving the sector budgets.

Uganda Water and Sanitation Network (UWASNET

NGOs involved in water sector activities have formed a network called Uganda Water and Sanitation Network (UWASNET) for improved coordination of their activities in the water sector. The network also provides a platform for constructive engagement with government and donors in the water sector and serves to promote the sharing of experience between the members.

There are some challenges that that the Water Resources Strategy seeks to address. These include:

a. Comprehensive planning which have implications for capacity (manpower, funding, institutional collaboration, etc.) hence the Strategy being formulated;
b. Adequacy of platforms for stakeholder/public participation. For example UWASNET focuses on water and sanitation issues and not water resources management;
c. Coordination weaknesses.

H. INTERNATIONAL INSTITUTIONAL FRAMEWORK FOR WATER RESOURCES MANAGEMENT

a) Nile Basin Initiative

The Nile Basin Initiative (NBI) is a transitional institutional arrangement responsible for sustainable management and development of the Nile basin water resources. 98% of Uganda lies within the Nile basin and thus almost all its water resources are part of the Nile. Active participation of Uganda in the Nile Basin Initiative activities is therefore key to the sustainable management and development of Uganda's water resources.

b) East African Community

The Lake Victoria Basin Commission (LVBC) established by a Protocol for Sustainable Development of Lake Victoria Basin of the EAC Treaty is an apex institution of the Community responsible for all the initiatives in the

Lake Victoria basin. Active participation of Uganda in the activities of LVBC is key because she controls 45 percent of the lake's surface.

c) Intergovernmental Government Authority Development (IGAD)

IGAD has developed the Inland Water Resources Management Program (INWRMP) to assist its member states to address the water issues. The INWRMP aims at the strengthening of national and regional capacities and their links to provide water on a sustainable basis. This is an important program since six out of eight of the IGAD countries are riparians to the Nile and Uganda is already participating in the program.

d) African Union (AU)

AU has specialized Technical Committees to address sectoral issues. In relation to water resources management, AU's Committee on Industry, Science and Technology, Energy, Natural Resources and Environment has an important role to play in the conduct and regulation of trans-boundary water resources relevant to Uganda.

6.8 Annex 8: Legal, policy and Institutional Framework for Water Resources Management in Uganda

Adapted from Uganda Water Resources Strategy (2014)

1. General

The principal policy and legal framework for the water resources in Uganda comprises of: the Water Action Plan (1994), the Water Policy (1999); the Water Act (Cap 152), the (Water Resources) Regulations S.1 No. 152-1 and the Water (Waste Discharge) Regulations, S.1 No 152-4. However, there are sectoral policies, legislation and regulations such as those related to oil and gas, mining, agriculture, transport, fisheries, wildlife, environment, forestry, public health, etc that contribute towards or have implications on water resources management.

At institutional landscape level, responsibility for water resources management is vested in the Ministry of Water and Environment (MoWE) and National Water Policy Committee. Other government ministries and agencies as well as districts have mandates over some aspects of water resources management. The MoWE and other ministries and lead agencies and districts collaborate with private sector, NGOs/CSO and research institutions in water resource management. Trans-boundary aspects of water resources management in Uganda is arranged through international cooperation framework such as the East African Community (EAC), Nile Basin Initiative (NBI), African Union (AU) and Inter-Governmental Authority on Development (IGAD).

Since 1994, there have been significant reforms in policy, legal and institutional frameworks. The reforms have taken into account specific issues of water resources management. This section describes an overview of the current policy, legal and institutional framework for water resources management.

2. Water Resources Management Policies

2.1 The National Water Policy (1999)

The National Water Policy (NWP), adopted in 1999, provides the overall policy framework for water resources management and development in Uganda. Its objective is "*to manage and develop the water resources of Uganda in an integrated and sustainable manner, so as to secure and provide water of adequate quantity and quality for all social and economic needs of the present and future generations with the full participation of the stakeholders"*

With regards to development of the National Water Strategy, the following policy principles and objectives are considered:

a) **Policy principles**

The guiding principles for water resources management contained in National Water Policy are:

i. freshwater as a finite and vulnerable resource, essential to sustain life, development and the environment,
ii. management of water resources at the lowest appropriate levels,
iii. the role of Government as an enabler in a participatory, demand-driven approach to development,
iv. the recognition of water as a social and economic good,
v. the integration of water and land use management,
vi. the essential role of women in the provision, management and safeguarding of water,
vii. the important role of the private sector in water management.

b) **Policy objectives**

The Objective is to *"Manage and develop the water re-sources of Uganda in an integrated and sustainable manner, so as to secure and provide water of adequate quantity and quality for all social and economic needs of the present and future generations with the full participation of all stakeholders.*

In order to ensure the Uganda achieves the above objective, the National Water Strategy will seek to address the following aspects of water resources management as derived from the policy objective:

i. Recognition of water as key resources for Uganda's social and economic development.
ii. Strategies and actions that ensure an integrated and sustainable use and management of Uganda's water resources at all levels.
iii. Recognition and application of principles of Integrated Water Resources Management
iv. Deepening the de-concentration of water resources management approach (Catchment based Water Resources Management - CbWRM)
v. Public-Private Partnerships for WRM in order to enhance the participation of the private sector in monitoring and management of the resources in the form of self monitoring of permit conditions and payment of ecosystems services.
vi. Capacities for in-country training of water resources managers.

2.2 Sectoral Policies

2.2.1 The National Environment Management Policy, 1994

The National Environment Management Policy is the over-all policy for environmental management and coordination of environmental actions in Uganda. Its goal is to *promote of sustainable economic and social development that enhances environmental quality without compromising the ability of future generations to meet own needs*.

The following environmental management guiding principles that relate to water resources conservation and management will be considered in the Water Resources Strategy:

i. Sustainable management and development of the water resources in a coordinated and integrated manner so as to provide water of acceptable quality for all social and economic needs;
ii. Watershed management to control, conservation and regulation of the water balance in the catchment regions and water courses;
iii. Participatory water resources management at all levels;
iv. Monitoring and evaluating performance and outcomes /impacts of water policies, programs and projects;
v. Application of water management guidelines;
vi. Water resources planning for both surface and groundwater;
vii. Equitable and sustainable allocation of water for meeting ample quantities and good quality water for domestic, industrial, energy, and agricultural;
viii. Integrated Water Resources Management (IWRM).

2.2.2 The National Policy for the Conservation and Management of Wetlands Resources, 1995

The overall aim of the Policy is to *promote the conservation of Uganda's wetlands in order to sustain their ecological and socio-economic functions for the present and future well being of the people*. The policy provides for sustainable water supply and effluent treatment as core functions of wetlands. It requires that

any wetland serving as a source of water supply or receiving effluent, as part of a designated service to any human settlement be declared a fully protected wetland from any encroachment, drainage or modification.

Further, the policy recognises that wetland resources form an integral part of the environment and their conservation must be pursued in the context of an interaction between conservation and the overall development strategies and activities and wetland conservation would be achieved through a co-ordinated and co-operative approach involving all the concerned people and organisations in the country, including the local communities.

In this regards, the following aspects of wetlands functions and management requirements in relation to water resources management will be addressed in the Water Resources Strategy:

i. Flood and storm water control;
ii. Pollution control/management of pollutants and sediments/water purification;
iii. Water retention and discharge functions that sustain water availability;
iv. Options for wise use of wetland resources that do not affect the ecological function of the wetlands.

2.2.3 The Uganda National Land Policy, 2013

The goal of the Policy is: "*to ensure an efficient, equitable and optimal utilization and management of Uganda's land resources for poverty reduction, wealth creation and overall socio-economic development.* The policy provides principles and strategies on the natural resources and environmental management. It requires Government to ensure that all land use practices conform to land use plans and the principles of sound environmental management, including biodiversity preservation, soil and water protection, conservation and sustainable land management. One of the strategies for the policy is to mobilize communities and assist them to develop and implement actions or strategies for sound land management.

The following land policy measures relating to water resources management will be considered in the Water Strategy:

- ✓ Develop programs for the restoration of waste disposal sites, polluted watercourses, provide special protection for fragile ecosystem, including unique and sensitive biodiversity colonies, like hill tops, wetlands, water catchment areas, lake-shores and river banks;
- ✓ Compensation for all land owners whose land stretches into designated wetlands, hilltops, water catchment areas, lake shores, river banks and other sensitive eco-systems who acquired title before the coming into force of the 1995 Constitution and discontinue the alienation of designated wetlands, hilltops, water catchment areas, lake shores, river banks and other sensitive eco-systems by enforcing legislation, regulations, guidelines and standards;
- ✓ Integrated national and district level land use planning that compliments catchment management planning and IWRM principles, over-all.

2.2.4 The National Fisheries Policy, 2004

The overall goal of the policy is to *ensure increased and sustainable fish production and utilization by properly managing capture fisheries, promoting aquaculture and reducing post harvest losses*.
The following policy objectives and strategies relate to water resources management: i) co-operating with neighbouring states on the management of shared water bodies ii) supporting and participating in bilateral and regional processes and institutions for the management of shared water bodies, iii) initiate and encourage stocking programmes to improve fisheries diversity and productivity of the water bodies with fish from the same waters; iv) encourage involvement of communities in restocking and management of fish stocks in water reservoirs and minor lakes; v) encourage Local Government implement stocking programmes in dams,

reservoirs and small water bodies with participation of the communities; vi) Strengthening institutional arrangements for safeguarding national interests in international waters.

The Water resources strategy will consider the following aspects of the fisheries policy: monitoring and regulating likely effects of aquaculture and cage fish farming on water quality.

2.2.5 The National Forestry Policy, 2001

The main goal of the policy is to *establish an integrated forest sector that achieves sustainable increases in the economic, social and environmental benefits from forests and trees by all the people of Uganda, especially the poor and vulnerable*. The Policy provides policy directives on watershed management and soil conservation. It requires that watershed protection forests will be established, rehabilitated and conserved. It further commits the government to promote the rehabilitation and conservation of forests that will protect the soil and water in the country's key watersheds and river systems.

The Water Strategy will consider the following forestry policy issues related to water resources management:

i. Watershed/catchment forest management;
ii. Development and implementation of Catchment management plans.

2.2.6 National Oil and Gas Policy for Uganda, 2008

The goal of this policy is to *ensure that the use the country's oil and gas resources contribute to early achievement of poverty eradication and create lasting value to society.* With respect to water (and environment) management, the policy requires protection of the environment and conservation of biodiversity form oil and gas activities. It imposes the responsibility of the oil companies to protect the environment where they work or any areas in the country impacted by their operations. The Policy requires government to ensure that oil and gas activities are undertaken in a manner that conserves the environment and biodiversity and also to put in place legislation for regulating and monitor compliance of with environmental standards.

Further, the Policy commits government to support control measures against the release of hazardous gases, chemical wastes and spills into the atmosphere, water bodies, aquifers and soils which will ensure that water remains safe for animals, fish and human consumption.

The Water resource strategy will consider the following Oil and gas policy issues related to water resources management:

i. Regulation and monitoring of likely pollution and impacts of pollution on surface and ground water;
ii. Compliance with Water Use Regulations through securing water abstraction permits and complying with permit conditions;
iii. Management Oil wastes and their disposal.

2.2.7 The Energy Policy for Uganda, 2002

The main goal of the Policy is *to meet the energy needs of the Ugandan population for social and economic development in an environmentally sustainable manner*. The Energy policy prioritises development of renewable energy, including increasing hydropower generation to approximately 4,000MW by 2040. The energy policy recognises linkages between the energy sector and the other sectors including economy, environment, water resources, agriculture, forestry, industry, health, transport, education, decentralisation and land use.

The Water Strategy will consider the following policy aspects relating to water resources management:

i. Providing , on sustainable basis, adequate quantities of water for hydropower generation;
ii. Regulating and monitoring water use for hydropower generation.

2.2.8 The Uganda Wildlife Policy, 1999

The overall aim of the Policy is to *promote the long term conservation of the country's wildlife and biodiversity in a cost effective manner which maximises the benefits to the people of Uganda*. The policy recognises management of water bodies within wildlife protected areas as wildlife/biodiversity habitat and tourism attraction.

The Water Strategy will consider the following policy aspects relating to water resources management:

i. Regulating water based tourisms activities;
ii. Monitoring likely effects of tourism activities on water quality.

2.2.9 The Mining Policy of Uganda, 2000

The goal of the Policy is to *develop the mineral sector, for it to contribute significantly to sustainable national economic and social growth by creating gainful employment and providing alternative source of income particularly for the rural population in Uganda.* One of the objectives of the policy is to minimise and mitigate the adverse social and environmental impacts of mineral exploitation. It requires the Government to ensure that there is compliance with the existing laws and regulations on the environment and the protection of human health and safety. Further, the policy requires government to strengthen the environmental monitoring unit of the lead ministry, carry out sensitisation of the society on the impact of mining on environment, promote the application of environmentally friendly technologies and methods in mineral exploitation, ensure health and safety regulations in all stages of mineral development through regulations and education and undertake responsibility for the cleanup operations of past negative mining environmental impacts.

The Water Strategy will consider the following policy aspects relating to water resources management:

i. Monitoring likely water pollution from mining operations;
ii. Collaborating with lead ministry in planning and promoting mining technologies and approaches which cause minimal harm on hydrological systems.

2.2.10 The National Health Policy, 2010

The overall objective of health sector policy is to *reduce mortality, morbidity and fertility, and the disparities therein.* It requires the Government to address the increasing burden of disease resulting from water borne diseases associated with safe and clean water, hygiene and environmental sanitation.

The Water Resources Strategy will consider the following policy aspects relating to water resources management:

i. Increasing access to adequate clean and safe water for domestic use;
ii. Awareness about water sanitation, hygiene and waste management;
iii. Improved sanitation facilities and waste management facilities.

2.2.11 The Uganda Gender Policy, 2007

The Policy objective is to establish a clear framework for identification, implementation and coordination of interventions designed to achieve gender equality and women's empowerment in Uganda. The policy recognizes the role of women and youth in access and use of water at household levels. It anchors the importance of gender responsiveness in terms of planning, implementation and management of water and sanitation initiatives.

The Water Strategy will consider the following policy aspects relating to water resources management:

i. Gender mainstreaming in water access and sanitation facilities.

2.2.12 The Uganda Tourism Policy, 2003

The policy objective is Tourism development should be based on a wide participation of Ugandan and foreign investors and it should form the basis for protection of the environment including financial support for developing national parks and protected areas. Tourism development must be socially and culturally acceptable. The policy aim to ensure that tourism becomes a future vehicle for poverty reduction. The policy recognizes the importance of water based tourist attractions such scenery, sport fishing, *bunjee* jumping, water rafting, etc.

The Water Strategy will consider the following policy aspects relating to water resources management:

i. Regulating water use for tourism;
ii. Monitoring likely pollution associated with tourism.

2.3 Water Resources Management Legal Framework

Uganda has up to-date legislation for regulating water resources management and utilization. The Constitution of Republic of Uganda is the supreme law while the Water Act cap 152 is the principal law for water. TheWater Resources Regulations (S 152-1) and The Water (waste discharge) Regulations (S 152-4) provide for water use and management of waste water respectively. In additional, sectoral legislation on environment, wildlife, forestry, mining, energy, oil and gas, transport, Public health, fisheries, etc make specific water resources use and management provisional.

The key legislation and Regulations are as elaborated in sections here under.

2.3.1 The Constitution of Uganda (amended 2005)

The Constitution of the Republic of Uganda makes provision for natural resources of which water forms an integral part. Article 237 imposed the duty on the central government or local government to hold natural resources such as lakes and rivers in trust for the people of Uganda. As a trustee government only has power to regulate use of these resources in form of concessions, licenses or permits.

Principle XIII –XXVII of the Constitution imposes obligations on the central government to manage water resources. The central government is required to take all practical measures to promote good water management systems at all levels and promote sustainable development and public awareness of the need to manage land, air and water resources in a balanced and sustainable manner for the present and future generations, and utilization of natural resources in such a way as to meet the development and environmental needs of present and future generations. Under Article 39 every Ugandan has a right to a clean and healthy environment.

The Constitution provides the broad legal and policy framework within which all water sector legislation, policies and institutional framework for water resources management are developed. Several Acts have been

passed to provide a legal framework for directing development efforts towards achieving the national objectives set out in the Constitution.

The Water Strategy will consider the following aspects of water resources management in accordance with the Constitutional provisions:

- Ensuring the central government and local government implement the public trust doctrine in regulation and management of water resources;
- Promoting sustainable water use and participation by stakeholders;
- Ensuring the principle of clean and healthy environment so as to control water pollution control;
- Strengthening legal and policy framework as well as water resources development strategies and plans so as achieve sustainable water management.

2.3.2 The Water Act Cap 152 and Regulations

2.3.2.1 The Water Act Cap 152

The Water Act cap 152 is the principal law for the management of water resources in Uganda. The Act provides for the use, protection and management of water resources and supply; and, also provides for the constitution of water and sewerage authorities and facilitates the devolution of water and sewerage undertakings.

Notable among the objectives of this Act are the promotion of rational management and use of waters of Uganda; promoting the provision of clean and safe sufficient water supply to domestic purposes to all persons; allowing orderly development and use of water resources for purposes other than domestic (such as livestock watering, irrigation, agriculture, industrial, commercial and mining purposes, hydroelectric power generation, preservation of flora and fauna etc) in ways which minimize harmful effect to the environment; and the control of pollution and promoting safe storage, treatment, discharge and disposal of waste which may pollute water or otherwise harm the environment and human health. It also provides for penalties for offenders.

The Act establishes Water Policy Committee (WPC as an inter-sectoral body, whose function is to advise the Minister responsible for Water on various aspects of water resource management which include among others coordination the preparation and revision of water action plan.
The Water Resources Strategy is therefore a planning and management tool to implement the Water Act by the sector institutions in collaboration with the stakeholders and partners.

2.3.2.2 Water Regulations

The principal water regulations are the Water Resources Regulations S 152-1 and Water (waste discharge) Regulations, S 152-4

a) The Water Resources Regulations S 152-1

These regulations define procedures of application and regulation of water abstraction permits. Under the Regulations a person who occupies or intends to occupy any land wishes to construct, own, occupy or control any works on or adjacent to land on or adjacent to which there is a motorised water pump which, whether temporarily or permanently, pumps water from a borehole
or waterway; there is weir, dam, tank or other work capable of diverting or impounding an inflow of more than 400 cubic meters in any period of twenty-four hours or there are works for non consumptive uses requires to acquire a permit.

b) The Water (waste discharge) Regulations, S 152-4

These regulations provides for the establishment of standards for effluent or waste before discharge into water or on land, prohibition on the discharge of effluent or waste, and the requirement for waste discharge permits. They impose an obligation for every industry, establishment or holder of a waste discharge permit to install anti-pollution equipment for the treatment of effluent or waste discharge emanating from the industry. They provide for sampling of effluent and wastewater analysis by environmental inspectors and waste discharge fees which are a basis for the polluter-pays principle.

There have been reforms that affect the implementation of the Water Act and Regulations. These reforms were established administratively and the Water Act and the regulations are being reviewed to legalize the operations of the Directorate of Water Resources Management.

Regulations are also being drafted legalize the operation of water management zones; regulate rain harvesting and dams safety.

The Water Resources Strategy, building on the strength of these legislations and Regulations will seek to address the following areas of weak performance:

i. Regulating water use/abstraction, waste water and effluent discharge;
ii. Planning for water resource use and management;
iii. Harmonized institutional mandates and better performance (MoWE, WPC, DWRM, DWD NWSC);
iv. Coordination of water resources management and development by strengthening the involvement of NGOs, civil society, umbrella organisations and private sector.

2.3.2.3 The National Environment Act Cap 153 and Environmental Regulations

a) The National Environment Act Cap 153

This Act provides for sustainable management of the environment, establishment of the National Environment Management Authority as a coordinating, monitoring and supervisory body for that purpose. It provides the framework for coordinated and sound management of the environment including environmental impact assessment of water resources related projects and setting water quality and effluent standards. The Act thus plays an important role in the management of water resources in the following aspects: approval of EIA in consultation with the lead agency; establishment of water quality standards in consultation with the lead agency; issuing guidelines for the management of environment of lakes and rivers; protection of banks of rivers and shores of lakes in Uganda from human activities that will adversely affect the rivers and the lakes, regulation of pollution of land or water.

The implications of the Act for the Water Resources Strategy are that NEMA and DWRM have to collaborate to ensure that standards for water quality are ensured and maintained. Therefore, the Water Resources Strategy will provide measures for strengthening institutional collaboration between NEMA and water sector institutions and stakeholders in realizing the above mentioned provisions in the Environment Act.

b) The Environment Regulations

(i) The National Environment (Standards for Discharge of Effluents into Water or on Land) Regulations, SI 153-3

The Regulation addresses discharge of effluents on to land or water. It sets the maximum permissible limits for effluent or waste water before it is discharged into water or on land. The Regulations empower the Executive Director or a person authorised by him or her to issue guidelines and recommend the method of treatment of

effluent for industries or establishments so as to ensure assimilation by the water or land into which the effluent is discharged. They also impose a general obligation on every industry or establishment shall install at its premises, antipollution equipment for the treatment of effluent and chemical discharge emanating from the industry or establishment.

(ii) The National Environment (Delegation of Waste Water Discharge Functions) Instrument S.1 No. 153-4.

The Regulations address delegated function of regulating discharge of waste water from industries to from NEMA to the Director, DWD. The National Environment Act requires that that an operator of a plant undertakes pre-treatment of effluent before discharge into any water in accordance with the Act and the National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations.

(iii) The National Environment (Waste Management) Regulations, S 153-2

The Regulations address the management of solid wastes. These Regulations apply to all categories of hazardous and nonhazardous waste; to the storage and disposal of hazardous waste and its movement into and out of Uganda and) to all waste disposal facilities, landfills, sanitary fills and incinerators. The Regulation require a person licensed to own or operate a waste treatment plant or disposal site to ensure that the waste treatment plant or disposal site is a radius of at least
one thousand metres away from a residential or commercial area and from water sources; the waste treatment plant or disposal site is enclosed and secure from scavengers and the waste treatment or disposal site has hazard and safety signs.

(iv) The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, SI 153-5

These regulations provide for the management of wetlands, lake shores and river banks, ensuring water catchment conservation, sustainable utilization and conservation of resources involved, promoting the integration of wise use of resources, and prevent and control of pollution and degrading activities. It also provides for a mandatory environmental impact assessment for developments within wetlands, lake shores or river banks likely to have significant environmental impacts, as well as annual environmental audits. It also provides for application procedures for permits for regulated activities in these protected areas, defines regulated activities, wetlands of international importance, and names rivers and lakes for which buffer zones of up to 100 m and 200m respectively are mandatory.

(v) The Environment Impact Assessment Regulations, Statutory Instrument 153—1

The regulations apply to all project of out of character with its surroundings or any structure of a scale not in keeping with its surroundings or major changes in land use. Thus they require that no developer shall implement a project for which environmental impact assessment is required under the Act and under these Regulations unless the environmental impact assessment has been concluded in accordance with the Regulations. The regulations require that in case a project affect water, that the lead agency for shall make written comments on the project brief and transmit them to the executive director of NEMA within fourteen working days of receiving it and where the lead agency fails to make comments and transmit them to the executive director within the period specified in the executive director may proceed to consider the project brief. They also provide that an environmental impact study shall be conducted in accordance with terms of reference developed by the developer in consultation with the NEMA and the lead agency. The Lead Agency is also required to make comments on the EIS and transmits them back to the ED within thirty working days of receiving the environmental impact statement.

(vi) The National Environment (Hilly and Mountainous Areas Management) Regulations, SI 153-6

These Regulations aim at facilitating sustainable utilization and conservation of resources in mountainous and hilly areas by and for the benefit of the people and communities living in the area and promoting the integration of wise use of resources in mountainous and hilly areas into the local and national management of natural resources for socio-economic development.

The Regulations require that that occupiers of land in mountainous and hilly areas observe the carrying capacity of the land; carry out soil conservation measures, utilize underground and surface water catchments areas and use available technologies to minimize significant risks to the ecological and landscape aspects and maintain vegetation cover as may be determined by an Agricultural Extension Officer. The hilly areas and mountains in Uganda are known for their catchment values and are a source of numerous rivers and streams, and whose land covers degradation and soil erosion is having a siltation impact on these rivers.

The Water Resources Strategy will aim at proposing measures for strengthening:

i. Effectiveness of delegated function, including the functional role of DWD and DWM in the delegated responsibilities;
ii. Capacity for enforcement and compliance monitoring, including data management (collection, analysis, sharing);
iii. Compliance assistance (and incentives for compliance/disincentives for non compliance e.g., punitive measures);
iv. Institutional collaboration in enforcement, monitoring and reporting;
v. Institutional participation in reviewing and approving EIAs.

2.3.2.4 The Local Governments (Kampala City Council) (Solid Waste Management) Ordinance S I 243—21

The Ordinance was made under sections 38 and 40 of the Local Government Act. This Ordinance applies to all areas of the district, including private premises, Government-owned properties and council properties. It requires that disposal of refuse on the ground shall be by controlled sanitary landfill method. It also requires that no person other than the council shall operate or maintain a sanitary landfill without a permit issued by the council or otherwise than in accordance with this Ordinance and any other written law in force. The applicant to operate a sanitary landfill shall be accompanied by a plan showing the following among other things depth to ground water and proximity to surface water or drainage courses. It requires that a landfill operator to prevent the pollution of surface or groundwater and prevent or eliminate any public nuisance on the premises.
A landfill operator is required to provide at the premises adequate water supply.

The Water Resources Strategy will aim at proposing measures for strengthening:

i. Capacity for controlling and monitoring likely pollution from landfills.

2.3.2.5 The Local Government Act Cap 243

The Local Governments Act defines roles for different levels of government in provision and management of water and sanitation related activities. The Act stipulates that provision of water for domestic use and maintenance of facilities is a role of Local Governments in liaison with the Ministry responsible for Water Affairs. The Act empowers the different levels of government to plan and implement development interventions according to identified local priorities.

Part 2 of the Second Schedule to the Act prescribes the functions of Government that the District Councils are responsible for. The following are the functions relevant to water resource management are: forests, wetlands, environment, sanitation and protection of streams/river banks and lakeshore.

Part 3 of the Second Schedule to the Local Governments Act, prescribes the functions for which the Urban Councils are responsible. Some of the functions relevant to water resource management are: providing sanitary services and providing water services outside the jurisdiction of National Water and Sewerage Corporation.

Under part 4 of the Schedule, the District councils may devolve services and functions to the Lower Local governments including the protection of wetlands, the protection and maintenance of local water resources and any other functions the District may delegate. It is not clear how many districts have formally devolved these functions.

The Water Resources Strategy will seek to strengthen the mandate of Districts Authorities, Urban Authorities and lower Councils, in the following priority areas:

i. Enforcement and monitoring compliance of delegated mandates;
ii. Enacting ordinances and bylaws for regulating water related uses;
iii. Increasing access to clean and safe water and sanitation facilities;
iv. Participation in IWRM/Catchment based Water Resources Management;
v. Participation in national level policy planning and implementation processes.

2.3.2.6 The Kampala Capital City Act, 2010

The Act establishes the Kampala Capital City Authority (KCCA) as the governing body of the city. KCCA is mandated among other things to construct and maintain major drains, developing Physical Development Plan for the Capital City and the metropolitan area and provide safe water and sanitation in the communities. The division Urban Councils are mandated among other things to manage public health and environment.

The Water Resources Strategy will include measures for strengthening institutional collaboration between KCCA and water sector institutions in the following mandates:

a. City Urban planning for water supply and waste water treatment;
b. Management of sources or causes of pollution including management of sewer, storm water and other non-point sources of pollution e.g., motor garages and vehicle washing bays.

2.3.2.7 The Land Act Cap 227

The Land Act provides for the tenure, ownership and management of land. It requires a person who owns or occupies land to manage and utilize the land in accordance with the environmental laws and other laws including the Water Act. It provides that the Government or a local government shall hold in trust for the people and protect natural lakes, rivers, ground water, natural ponds, natural streams, wetlands, forest reserves, national parks and any other land reserved for ecological and touristic purposes for the common good of the citizens of Uganda and thus the Government or a local government shall not lease out or otherwise alienate any natural resource. The two governments may grant concessions or licenses or permits in respect of a natural resource. It restricts all rights in the water of any natural spring, river, stream, watercourse, pond, or lake on or under land, whether alienated or un-alienated to the Government. Thus no such water shall be obstructed, dammed, diverted, polluted or otherwise interfered with, directly or indirectly, except in pursuance of permission in writing granted by the Minister responsible for water or natural resources in accordance with the Water Act. However, the Act allows reasonable use by occupier or owner of a piece of land, of water for domestic and small-scale agricultural purposes.

The Water Resources Strategy will provide measures for strengthening collaboration between MHLUD and water sector institutions the following priorities:

a. Physical Planning;
b. Integrated land use planning and management.

2.3.2.8 The Uganda Wildlife Act Cap 200

The Act provides for sustainable management of wildlife, to consolidate the law relating to wildlife management, establish a coordinating, monitoring and supervisory body for that purpose (Uganda Wildlife Authority- UWA) whose principal function is to ensure sustainable management of wildlife resources in Uganda. Further the Act provides for declaration of an area of land or water a Wildlife Conservation Area. The latter provision has important implication for the Water Act in reference to use of water resources in Uganda.

The Water Resources Strategy will provide measures for strengthening institutional collaboration between lead ministry and UWA in the following priority water resources management issues:

a. Management of water resources for biodiversity purposes;
b. Management for water resources to promote water based tourism;
c. Monitoring likely effects of water based tourism on water quality;
d. Access/use of water resources within wildlife protected areas;
e. Management of watershed/catchment designated Wildlife Conservation areas (forested national parks).

2.3.2.9 National Forestry and Tree Planting Act, 2003

The National Forestry and Tree Planting Act (2003) provides for the conservation, sustainable management and development, and use of forests for the benefit of the people of Uganda. The Act Section empowers the Minister to declare a strict nature reserve for the purpose of protecting streams, rivers, lakes, lakeshores, riverbanks or wetlands. It provides that an order declaring a local forest reserve shall be revoked only where soil, slope, or other watershed conditions will not be irreversibly damaged and further provides that the forests shall be developed and managed so as to conserve natural resources, especially soil, air and water quality. In essence, the Act aims at protection the water sources and hydrological function of forests covering water shed/catchments.

The Act empowers a District Council accordance with the Local Governments Act to establish a District Forestry Office and appoint a District Forestry Officer and such other officers whose functions include liaising with the National Forestry Authority and other lead agencies on matters relating to forestry; promoting the planting of trees; undertaking duties involved in the management of local forest reserves; advising and supporting the management of community forests and assisting in the development and provision of advisory services relating to private forests.

The Water Resources Strategy will provide measures for strengthening institutional collaboration between lead ministry, NFA, FSSD and Districts in the following priority water resources management issues:

a. Development and implementation of Catchment management plans;
b. Access/use of water resources within protected forests (Forest reserves);
c. Management of watershed/catchment designated forest reserves.

2.3.2.10 The Public Health Act Cap 281

The Act consolidates the law in the respect of Public health. It place duties on the Urban and local authorities in matters pertaining to public health. It requires every local authority to take all lawful, necessary and reasonably practicable measures for preventing any pollution dangerous to health of any supply of water which the public within its district has a right to use and does use for drinking or domestic purposes, whether the supply is derived from sources within or beyond its district and for purifying any such supply which has become so polluted. It can take measures, including if necessary, proceedings at law, against any person so polluting any such supply or polluting any stream so as to be a nuisance or danger to health.

The Water Resources Strategy will provide measures for strengthening institutional collaboration between lead ministry, Urban Authorities and Local Authorities in the following priority water resources management issues:

a. Water pollution control and management from storm water, waste water, sewer and non-point sources;
b. Development and enforcement of ordinances and bylaws on water use and pollution control;
c. Increasing access to safe and clean water and sanitation facilities.

2.3.2.11 The Fish Act Cap 197

The Act governs the utilization and management of fisheries resources. It controls fishing in the following water bodies' aquarium dam, fish pond and shores. It empowers the Minister by statutory order to declare that all or any specific provisions of the Act relating to licences may not apply to any area or waters of Uganda. The Minister is also empowered in his or her discretion to exempt any person or persons from all or any of the provisions of the Act either generally or in respect of any particular area or waters.

The implications of this Act for the Water Resources Strategy is that there is a need for DWRM collaborate with the Fisheries Department regarding the regulation new fisheries management technologies for example cage fish farming and aquaculture. The Water Resources Strategy will provide measures for:

a. Institutional collaboration in licensing and monitoring compliance of cage fish farming and aquaculture to Water Act, Water Regulations and Water quality Standards;
b. Monitoring likely effects on cage fish farming and aquaculture on water quality.

2.3.2.12 The Mining Act, 2003

The Act provides for the ownership, prospecting and mining of minerals in Uganda. It restricts mining activities in water. The Act provides that all rights in wetlands and in the waters of any spring, stream, river, watercourse, pond or lake on or under public land, are vested in the Government; and no such wetlands or water shall be obstructed, dammed, diverted, polluted or otherwise interfered with, directly or indirectly, except in accordance with the provisions of Part II of the Water Act. It regulates the grant of water rights thus every application for a mineral right shall indicate whether the applicant intends to utilise for prospecting, exploration and mining operations any water existing within the boundaries of his or her mineral right or to utilise any natural source of water existing at the site to which mining products are conveyed for washing to obtain and convey to the area of his or her mineral right from any natural water supply outside the boundaries of the mineral right, such specified volume of water as may be required for the relevant operations or to occupy any land that may be required for the construction of a dam, reservoir or pumping station and for the conveyance of such water to the area where the water is utilised, by means of pipes, duets, flumes, furrows or otherwise, and for such conveyance to have a right of passageway or to construct any works necessary for the collection, storage or conveyance of such water.

The Water Resources Strategy will provide measures for strengthening collaboration between lead ministry, Department of Geological Surveys, Districts and stakeholders in the following aspects:

i. Processing mining and prospecting licenses where water resources are likely to be involved/affected;
ii. Enforcing mining license conditions in relation to water, wetlands and drainage systems;
iii. Monitoring pollution from mining operations.

2.3.2.13 The Petroleum Acts

Petroleum exploration, development, production, refining, conversion, transmission and midstream storage is regulated by the Exploration, Development and Production) Act, 2013 and Refining, Conversion, Transmission and Midstream Storage) Act, 2013. The two acts require a licensee to carry out petroleum activities in the licenced area in a proper and safe manner and in accordance with the requirements of the applicable law, regulations and conditions stipulated by lawful authorities and best petroleum industry practices. He or she is also required to take all reasonable steps necessary to secure the safety, health, environment and welfare of personnel engaged in petroleum activities in the licence area including controlling the flow, and preventing the waste or discharge, into the surrounding environment, of petroleum, gas which is not petroleum or water and preventing the escape of any mixture of water or drilling fluid, and petroleum or any other matter.

The Petroleum Authority is mandated to direct a licencee to prevent water or any other matter entering any reservoir through the wells, except when in accordance with properly approved plans and best petroleum industry practices or prevent the pollution of any water well, spring, stream, river, lake or reservoir by the escape of petroleum, water, drilling fluid, chemical additive, gas not being petroleum or any other waste product or effluent.

The Water Resources Strategy will provide measures for:

a. Strengthening collaboration between lead ministry, PEPD, Petroleum Authority, Oil and Gas companies and stakeholders in developing joint management procedures, guidelines and capacities for preventing, monitoring or managing pollution from drill waste water and fluids, oil spills, etc.

b. Providing adequate water for the “high value projects” such as oil refinery and exploration activities.

2.3.2.14 The National Water and Sewerage Corporation Act Cap 317

The Act establishes the NWSC as a water and Sewerage Authority and gives it the mandate to operate and provide water and sewerage services in areas entrusted to it on a sound commercial and viable basis. Presently, NWS operates and provides water and sewerage services for 23 large urban centres across the country including Kampala City.

The Water Resources Strategy will provide measures for:

a. Increasing supply of adequate quantities clean and safe water to all populations, especially, urban population;
b. Institutional collaboration with water sector institutions in waste water/sewer management and pollution control in area sunder NWSC jurisdiction.

2.3.2.15 The Rivers Act Cap 357

The Act regulates dredging in rivers and the use of steam vessels on rivers. It requires any person wishing to dredge a river to acquire a licence from the Minister responsible for Water resources. The Act affects such

activities on rivers listed in the first schedule including: Aswa,Kafu,Kagera,Katonga,Mayanja, Sezibwa and Nile (portion from Lake Victoria to Lake Albert). The Act requires the master of every steam vessel on a river to acquire a licence for that vessel.

The Water Resources Strategy will provide measures for strengthening collaboration between DWRM and DWM in:

a. Processing dredging licence;
b. Monitoring likely impact of dredging in rivers and the use of steam vessels on rivers in first schedule.

2.3.2.16 The Control of Agricultural Chemicals Act Cap 29

This Act regulates the manufacture, storage, distribution and trade in, use, importation and exportation of, agricultural chemicals and for other purposes connected therewith. It establishes the Agricultural Chemicals Board and one of the members should be a public officer appointed by the Minister responsible formatters relating to the environment. The Board is charged with ensuring that agricultural chemicals are properly managed through registration, labelling, issuance of licences regulating quality and importation. Where an inspector believes on reasonable grounds that this Actor any regulations made under it has or have been contravened, he or she may seize and detain the agricultural chemicals by means of or in relation to which he or she believes the contravention was committed. However, the Act does not make strong provisions for disposal of agricultural chemicals.
The Water Resources Strategy will provide measures for strengthening collaboration between Lead Ministry and water sector institutions in:

a. Participation in the Agricultural Chemicals regulatory body (Agricultural Chemical Board);
b. Promoting safe handling, application and disposal of Agricultural Chemicals;
c. Monitoring likely pollution arising from use of agricultural chemicals as one of the non-point sources of water pollutants.

2.3.2.17 The Inland Water Transport (Control) Act Cap 356

The Act restricts and controls the carriage of goods and passengers by water within Uganda. This Act requires any person interested in conveying goods by means of a ship on inland waters of Uganda, to apply for a licence. The Act defines the Board as the Transport Licensing Board established by the Traffic and Road Safety Act. The Board is empowered to attach to any licence the condition that certain classes or descriptions of goods shall or shall not be carried or any other conditions deemed necessary, in public interest.

The Water Resources Strategy will provide measures for strengthening collaboration between Lead Ministry and Transport Licensing Board in:

a. Promoting safe conveying goods by means of a ship on inland waters;
b. Monitoring likely pollution arising from use of water transport vessels.

2.4 International Law Requirements and Implications for Water Resources Management in Uganda

There are several international agreements and customary international law principles that have implications for water resources management.

2.4.1 Agreements that Uganda has Ratified

(a) The Treaty for the Establishment of the East African Community 1999

The EAC treaty covers five partner States of Kenya, Uganda and Tanzania, Burundi and Rwanda. One of the objectives of the treaty is promotion of a sustainable growth and equitable development of partner States including rational utilization of the region's natural resources and protection of the environment. The treaty provides that States agree take measures to control trans-boundary water pollution arising from developmental activities adopt common environmental standards for the control of water pollution arising from urban and industrial development activities and exchange information on water and harmonize their policies and regulations for the sustainable and integrated management of shared natural resources and ecosystems.

The implications of the treaty for the Water Resources Strategy are that Uganda has to strengthen the institutional framework for promoting trans-boundary water resources management, especially, Lake Victoria and its catchment.

(b) The Protocol for Sustainable Development of Lake Victoria Basin 2003

Uganda as signatory of the EAC Treaty also signed the Lake Victoria Protocol. This protocol is a detailed document aimed at sustainable development in Lake Victoria. Sustainable development, management and equitable utilization of water resources is one of the areas of co-operation. It requires partner states toprevent pollution at source prevention and non-point sources

The implication of this Protocol for the Water Resources Strategy is that Uganda as a signatory to the Protocol is required to enforce measures that require developers of planned activities to prevent pollution, and where prevention is not possible, minimize pollution.

(c) The Convention for the Establishment of the Lake Victoria Fisheries Organization, 1994

Uganda is one of the parties to the Convention. The Convention establishes the Lake Victoria Fisheries Organisation (LVFO) whose main objective is to foster co-operation among the Contracting Parties, harmonize national measures for the sustainable utilization of the living resources of the Lake and to develop and adopt conservation and management measures. To achieve the objectives, the LVFO has the responsibilities to: promote the proper management and optimum utilization of the fisheries and other resources of the Lake; to provide a forum for discussion of the impacts of initiatives dealing with the environment and water quality in the Lake basin and maintain a strong liaison with the existing bodies and programs and provide for the conduct of research concerning the waters of Lake Victoria, including without limitation the quality of such waters, in particular with respect to supporting the living resources of the Lake and the nature, extent and pathways of its pollution and other forms of environmental degradation;

The implication of this Protocol for the Water Resources Strategy is that Uganda is the seat of the LVFO which is important for strengthening its position of management of fisheries resources in Lake Victoria.

2.4.2 Agreements that Uganda has signed but not Ratified

(a) The Nile River Basin Cooperative Framework Agreement 2010

Uganda signed the Cooperative Framework Agreement (CFA) on the 14th May 2010. The CFA covers the use, development, protection, conservation and management of the Nile River Basin and its resources. It also establishes an institutional mechanism for cooperation among the Nile Basin States.

The implications of the CFA for the Water Resources Strategy are that it provides opportunities for cooperation, development and sustainable management/utilisation of the water resources of the Nile River Basin for the benefit of all. The ratification of the CFA by Uganda is important because when the agreement

becomes effective, Uganda will host the headquarters of the Commission which puts her in a strategic position to handle the Nile Basin issues.

(b) EAC Protocol on Environment and Natural Resources Management 2006

The Protocol is designed to govern the Partner States in their cooperation in the management of environment and natural resources over areas within their jurisdiction including trans-boundary environment and natural resources. For water management, it requires the Partner States to cooperate in the management of shared water resources.

The implications of the Protocol for the Water Resources Strategy are that it calls for joint management of shared water resources.

2.4.3 Agreements that Uganda Has Not Signed

(a) The Convention on the Law of the Non-navigational Uses of International Watercourses, 1997

The UN Watercourses Convention adopted in 1997 is a global legal framework that establishes basic standards and rules for cooperation between watercourse states on the use, management, and protection of international watercourses. As a global legal umbrella, the Convention is important because it seeks to supplement, facilitate, and sustain trans-boundary water cooperation at all levels. Moreover, some of the provisions of the Convention are already included in regional and bilateral agreements and it also has some linkages with other conventions and international policies that Uganda is a party to. Uganda should consider signing this Convention so as to widen her participation in international water law.

2.4.4 Customary International Law

Customary international law on water consists of a number of key principles that guide water resources management. These principles are important in the management of trans boundary resources. The three most important principles involve the equitable and reasonable allocation of shared watercourses; the obligation to prevent significant harm; and the need for prior notification of works which may affect other riparians sharing international watercourses. The relevant instruments that contain customary international principles are: The Helsinki Rules on the Uses of the Waters of International Rivers, adopted by the International Law Association in 1966. The Seoul Rules on International Groundwater's adopted by the International Law Association in 1986 and the Berlin Rules promulgated by the International Law Association in 2004. These principles should be incorporated in the legal framework of water resources management.

The Water Resources Strategy will provide measures for strengthening Uganda's:

a. Participation in regional/international policy, planning and negotiations processes associated with EAC, AU, NBI, among others;
b. Capacity to meet her obligations to international obligations/regional agreements and protocols;
c. Capacity to benefit from or apply water resources management technologies, information and resources availed through international and regional cooperation.