



National Water Resources Management Agency  
(NWRMA)

Five-year Strategic Development Plan  
(2019 -2023)

## Foreword

The National Water Resources Management NWRMA Strategic Development Plan (NWRMA-SDP) **indicates the NWRMA's** determination to provide the road map for achieving the vision of the NWRMA which is "To be one of the leading water resources management agencies in West **Africa**".

The NWRMA-SDP unearths and addresses the current and upcoming issues in the management and regulation of water resources in Sierra Leone with a view to proposing workable strategies in order to ensure that raw water users do not have undue advantage over others, while at the **same time making sure that the country's water resources are conserved** in a sustainable way that will fulfil the aspirations of the Sustainable Development Goal (SDG6) and beyond. It also **on the other hand shows the government of Sierra Leone's unflinching commitment** in actualizing the National Water Resources Management NWRMA Act No. 5 of 2017 and the New Direction agenda.

Sierra Leone blessed with abundance of water resources potential yet can hardly meet the needs of the growing population in the face of climatic variability for sustainable and equitable water demand and supply management. In this regard, the first National Water Resources Management Agency Strategic Development Plan (NWRMA-SDP) harbours a transparent and accountable framework in assessing, allotting, conserving, developing management strategies and regulatory framework for water resources, employing an integrated approach. Achieving this, catchment degradation may minimize with pollution control.

The NWRMA Sustainable Development Plan has been put together largely through a participatory and consultative process drawn from key sector stakeholders. The plan emanates extensively from the objects for which the NWRMA has been established as same are postulated by the National Water Resources Management NWRMA Act No. 5 of 2017 lest we be accused of having meddled into other Ministries, Departments **and Agencies' (MDAs)** jurisdiction. The NWRMA-SDP is a reference document, which will undoubtedly be used for

mobilizing financial support and other logistical requirements for investment in the management of water resources in the country.

We wish to extend our sincere appreciation to SALWACO, Guma Valley Water Company, Ministry of Water Resources, development partners, WASH stakeholders, Electricity and Water Regulatory Commission and all those who in diverse ways unflinchingly contributed and supported the process in the preparation of this strategic plan for the running of the NWRMA.

Junisa Patrick Bangali Esq

Director - General

## Executive Summary

Sierra Leone is a country known to have abundant water resources. However, the demand on these resources is growing rapidly due to increasing pressures from hydroelectric power generation, water supply to urban, small and large towns, mining, industrialization and irrigation activities. The destruction of critical watersheds and water catchment areas and changing climatic conditions have resulted to water scarcity leading to the drying up of many streams and resulting in the decline of the groundwater aquifers.

Realizing the crucial need to reverse this deteriorating situation, the New Direction government **has put in place a framework to manage the country's water resources** sustainably by helping to promote sound stewardship of water resources management at local, national and transboundary levels.

**The sustainable management of Sierra Leone's water resources** is one of the bases of the National Water and Sanitation Policy 2010 (NWSP). The policy recommends the establishment of a regulatory **body responsible for the management of the country's water** resources with the core objective of developing a comprehensive framework for promoting the optimal, sustainable and equitable development and use of water resources.

This strategic development plan is developed in compliance with the National Water Resource Management (NWRMA) Act No.5 of 2017 and articulates interventions for achieving the Ministry of Water Resources (MWR) mandate and strategic plan for the period ending 2019 - 2023. The strategic plan is a statement of purpose aimed at achieving **the desired outcomes of NWRMA's Act, the Sustainable Development Goals (SDG)** by 2030 and the Sierra Leone National Development Agenda (2018 - 2023) by ensuring the utilization, management and conservation of **Sierra Leone's water resources through the** principles of Integrated Water Resources Management (IWRM) approach in order to **achieve the government's policy objectives.**

The National Water Resources Management strategic plan strategy is comprehensive and encompasses a wide range of activities that set out key priorities for the period 2019-2023. It is based on international best practices of IWRM for management of water resources by identifying weak water governance, weak framework for disseminating best practice and lessons in IWRM, challenges, opportunities and threats, internal strengths and weaknesses of the NWRMA, stakeholder identification and management and outlines various interventions to address the challenges.

The strategic plan is structured into six chapters as follows:

- Chapter 1: Brief description of the strategy and its purpose
- Chapter 2: Description of water resources potential in Sierra Leone and NWRMA challenges and opportunities
- **Chapter 3: Outline of the NWRMA 's vision and mission statement**, core values and goals
- Chapter 4: Describes the strategies for achieving the five-year goals in line with the NWRMA Act No.5 of 2017
- Chapter 5: Presents the implementation strategy, and concludes with possible assumptions, risks and risk management along with key performance indicators (KPIs) based on which progress will be monitored towards achievement of goals
- Chapter 6: Presents the cost implication in achieving the goals of the strategic plan.

The annexes consist of detailed logical framework, implementation time frame, budget **and the NWRMA's logo description.**

This strategic development plan for the NWRMA is geared towards the sound promotion of water resources management in Sierra Leone and to assist staff of the NWRMA to achieve these goals with innovative managerial solutions. This is not to indicate that this **is a final word that will solve the country's water resources** problems, but to show how we have placed the NWRMA on the right footing towards achieving the New Direction Agenda

and for our development partners to see where they can step in as we all strive to attain the SDGs.

## Contents

<b>Foreword</b> .....	<b>ii</b>
<b>Executive Summary</b> .....	<b>iv</b>
<b>List of Tables</b> .....	<b>xii</b>
<b>List of Figures</b> .....	<b>xii</b>
<b>Organogram</b> .....	<b>xiii</b>
<b>Chapter 1 - Introduction</b> .....	<b>1</b>
<b>1.1 Country Profile</b> .....	<b>1</b>
<b>1.2 Status of Water Resources Management</b> .....	<b>1</b>
<b>1.3 Degradation of Water Resources</b> .....	<b>2</b>
<b>1.4 Monitoring and Assessment of Water Resources</b> .....	<b>3</b>
<b>1.5 Policy Direction</b> .....	<b>3</b>
1.5.1 Reforms in the Water Sector .....	3
1.5.2 The National Water Resources Management Agency Act No. 5 of 2017 and the NWRMA-SDP.....	4
1.5.3 National Water and Sanitation Policy 2010 .....	4
1.5.4 Presidential Address - 14 <sup>th</sup> of May, 2018 .....	5
1.5.5 The National Water Resources Management Agency (NWRMA) .....	5
<b>1.6 Purpose of the NWRMA-SDP</b> .....	<b>7</b>
<b>Chapter 2 – Water Resources Management, Challenges and Opportunities</b> .....	<b>9</b>
<b>2.1 Water Resource Potential in Sierra Leone</b> .....	<b>9</b>
2.1.1 Surface Water .....	9
2.1.2 Groundwater .....	10
2.1.3 Trans-Boundary Water Resources .....	11
<b>2.2 Challenges of Water Resources Management in Sierra Leone</b> .....	<b>12</b>
<b>2.3 SWOT ANALYSIS</b> .....	<b>13</b>
<b>Chapter 3 – Vision, Mission, Core Values and Goals</b> .....	<b>15</b>
<b>3.1. Vision</b> .....	<b>15</b>

3.2. Mission .....	15
3.3. Core values.....	15
3.4. Goals.....	16
<b>Chapter 4 – NWRMA SDP Results Framework.....</b>	<b>18</b>
4.1 Specific Goals & Outputs .....	18
4.1 Outputs & Key Activities.....	19
Specific Goal 1: Development of regulatory and institutional framework .....	19
Specific Goal 2: Water resources assessment and monitoring.....	21
Specific Goal 3: Protection of Watersheds and Catchments .....	23
Specific Goal 4: Capacity Development and Knowledge Management .....	25
Specific Goal 5: Water-related disaster management and climate change mitigation and adaptation.....	25
Strategic Goal 6: Management of trans-boundary Water Resources .....	26
<b>Chapter 5 – Implementation Strategy .....</b>	<b>28</b>
5.1 The Comprehensive View Point .....	29
5.2 Recognition of Water as an Economic Good .....	30
5.3 Stakeholder Participation.....	31
5.4 Gender Sensitivity.....	31
5.5 Coordination.....	33
<b>Chapter 6 - Cost Implications.....</b>	<b>35</b>
6.1 Assumptions, Risks and Risk Management .....	37
<b>Annex.....</b>	<b>39</b>
Annex 1: Logical framework for the NWRMASDP .....	39
Annex 2: Time frame for the implementation of the NWRMA strategic plan. ....	56
Annex 3: Budget by output/ major activity and outcome. ....	63
Annex 4: Various financing options for NWRMA. ....	66
Annex 5: Approaches for Preventing, Responding and Recovering from Water-Related Disasters.....	68
Annex 6: NWRMA logo description. ....	71
<b>References.....</b>	<b>72</b>



## Abbreviations

CSOs	Civil Society Organisations
EPA	Environment Protection Agency
EWRC	Electricity and Water Regulatory Commission
GNI	Gross National Index
GDP	Gross Domestic Product
GVWC	Guma Valley Water Company
ICT	Information Communication Technology
IWRM	Integrated Water Resources Management
KPIs	Key Performance Indicators
MDAs	Ministries, Departments and Agencies
M&E	Monitoring and Evaluation
MFAIC	Ministry of Foreign Affairs & International Cooperation
MLGRD	Ministry of Local Government and Rural Development
MLCPE	Ministry of Lands, Country Planning and Environment
MOF	Ministry of Finance

MoPED	Ministry of Planning and Economic Development
MoU	Memorandum of Understanding
MRU	Mano River Union
MWR	Ministry of Water Resources
NMA	National Minerals Agency
NPAA	National Protected Area Authority
NWRMA	National Water Resources Management Agency
NWRMA-SDP	National Water Resources Management Agency Strategic Development Plan
NWSP	National Water and Sanitation Policy
ONS	Office of National Security
PRSP4	Poverty Reduction Strategy Paper 4
SALWACO	Sierra Leone Water Company
SDG	Sustainable Development Goals
SL MET	Sierra Leone Meteorological Agency
SWOT	Strengths, Weaknesses Opportunities and Threats
WRM	Water Resources Management

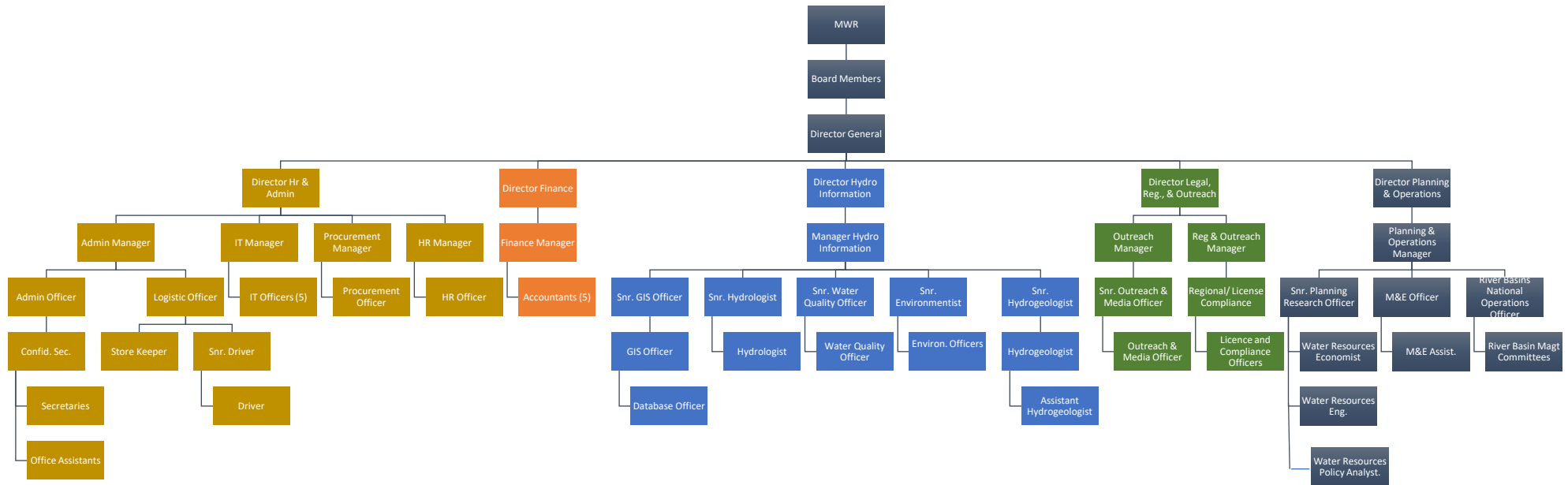
## List of Tables

Table 1: SWOT analysis of NWRMA .....	14
Table 2: Strategic goals and associated objectives of NWMRA.....	18
Table 3: Objectives and Strategies for Strategic Goal 1 .....	19
Table 4: Objectives and Strategies for Strategic Goal 2 .....	21
Table 5: Objectives and Strategies for Strategic Goal 3.....	23
Table 6: Objectives and Strategies for Strategic Goal 4.....	25
Table 7: Objectives and Strategies for Strategic Goal 5.....	26
Table 8: Objectives and Strategies for Strategic Goal 6.....	26
Table 3: Showing budget estimates by goal and annual allocations 2019 – 2023....	Error!
Bookmark not defined.	

## List of Figures

Figure 1: River basin map of Sierra Leone (Source: MWR) .....	10
Figure 2: Geology and proposed groundwater monitoring network (Source: MWR).....	11

## Organogram



## Chapter 1 - Introduction

### 1.1 Country Profile

Sierra Leone is a country located on the west coast of Africa between 7- and 10- degrees N, and longitudes 10.5- and 13- degrees W. The country has a total land area of 71,620 km<sup>2</sup> (surface area 71,740 km<sup>2</sup>) and is located within the upper Guinean rainforest with a coastline that stretches for about 400 km. The country has a population of approximately 7,092,113 according to the 2015 population census. Guinea borders it on the north, Liberia on the south-east, and the Atlantic Ocean on the south-west. Sierra Leone has a tropical climate with a diverse environment ranging from savannah to rainforests.

The Human Development Index (2018), ranked Sierra Leone 184th out of 189 with a Gross National Index (GNI) per capita of USD 1,240 (2018). The country has a high poverty rate of 74.8%. Tax revenues average 13% of GDP, lower than sub Saharan African average of 15%.

### 1.2 Status of Water Resources Management

Sierra Leone is considered to have abundant water resources but with a withdrawal rate of only 0.1%. The country has a mean annual rainfall of 2,526 mm which approximately equates to 80 - 100 km<sup>3</sup> /year when evapotranspiration losses are considered. However, owing to the insufficiency of surface water storage and/or major aquifers, the majority of runoff discharges directly into the sea.

Water scarcity has been one of the critical problems to national development, and this is as a result of the lack of consistent water resources information and systematic monitoring of water resources utilization and use. Overtime, water scarcity has worsened mainly as a result of population growth that is estimated at 2.7% per annum, continued urbanization, the rate of economic and industrial development including mining and commercial agriculture, deterioration of land and soil quality, the

accumulation of wastes, the limited water management as a result of climatic variability and climate change.

In 2016, 37.3% of water points were found to be non-functional in a national water point mapping exercise, while 51% of water points mapped were seasonal, meaning that the water points could not provide water throughout the year (Hirn.2016). The 2017 MICS survey found over 80% of households were using drinking water sources with high or very high levels of bacteriological contamination (MICS, 2016). Consequently, significant attention is needed to achieve water security, which has been defined **as** "the assurance of sufficient quantity and quality of water for all the uses to which water is put, combined with low risk from water-related hazards..." (MWR Water Security Project 2015).

### 1.3 Degradation of Water Resources

Soil erosion in catchments, over-abstraction of surface water, poor land use changes, and riparian lands decline leading to turbidity, flash floods, and siltation of water courses and reservoir facilities have all contributed to acute degradation of both the quality and quantity of water resources in some parts of the country. Furthermore, industrial effluent discharge and disposal of untreated faecal sludge and sewage outfalls which are poorly handled coupled with agrochemical pollution emanating from rural sources has also sullied the quality of water resources.

Increased runoff, flash flooding, erosion, siltation and reduced infiltration have been attributed to catchment degradation over the past recent years. The contributory factors of catchment degradation are as follows: uncontrolled urban expansion into water catchment areas, poor farming methodologies, and deforestation (for agricultural land, charcoal burning and fuel wood). Consequently, and invariably, catchment degradation will negatively affect the availability of surface water.. This is exactly the challenge facing Guma Valley Water Company currently and other regional cities.

## 1.4 Monitoring and Assessment of Water Resources

Over the years it is sad to note that the country's hydrometric network and data recording and reporting structure for the monitoring and assessment of the country's river flows has declined, which can no longer adequately bolster assessment of the **country's water resources potential**. However, there is hope in the GEF/UNDP funded Climate Change and Early Warning System Project and GEF/AfDB funded Climate Risk Management Infrastructure that aims at re-establishing the hydrological network. Furthermore, monitoring of groundwater resource and water resource quality has been insufficient. The sector has successfully produced groundwater data however the data is at a macro level and therefore needs additional review and assessment.

## 1.5 Policy Direction

### 1.5.1 Reforms in the Water Sector

Owing to the challenging issues that the water sector faces in the country, the government in 2010 decided to undertake some major reforms. These reforms, which were outlined in the National Water and Sanitation Policy of 2010, paved the way for the National Water Resources Management Agency Act No. 5 of 2017 to enhance achievement of SDG 6.

The reason for the preparation of the National Water Resources Management NWRMA Strategic Development Plan (NWRMA-SDP) was to catalogue the strategies and objectives to tackle the varying challenges and issues that the country currently faces in the management of its water resources. This strategy therefore postulates that an **Integrated Water Resources Management (IWRM) of the country's water resources** should be mainstreamed in the overall New Direction Agenda for development, to ensure it is prioritized for investment from both the government and development partners.

1.5.2 The National Water Resources Management Agency Act No. 5 of 2017 and the NWRMA-SDP

Section 13 (2) (a) of the National Water Resources Management Agency Act No.5 of 2017 provides for the preparation of the NWRMA-SDP in order to regulate, utilize, **protect, develop, conserve and control the country's water resources. In regulating, conserving and controlling the country's water resources, it is important to note that** this strategy shall outline the principles, objectives, procedures and the institutional arrangements involved.

1.5.3 National Water and Sanitation Policy 2010

The NWSP positions the Ministry of Water Resources as the apex body in the **management of Sierra Leone's water resources**, providing policy and oversight responsibilities. The NWSP recommends the establishment of a regulatory body **responsible for the management of the country's water resources with the core** objective of developing a comprehensive framework for promoting the optimal, sustainable and equitable development and use of water resources. The NWSP states specific objectives aimed at addressing the numerous challenges highlighted above, these specific objectives are as follows:

- **The nation's natural water** resources to be vested in the country and to ensure that all citizens have equal access to same.
- To ensure that water resources are effectively and efficiently utilized.
- To provide quality standards of water resources and promote the management of water conservation.
- The development of a water management scheme in order to protect the environment, ecological system and biodiversity.
- The development of a one-stop-shop for data and information with respect to water resources.
- The development of a sustainable financing for the management of water resources activities.

- International and regional cooperation promotion on trans-boundary water utilization.

Apart from the NWSP and the MWR 2018 strategic plan, the NWRMA-SDP is also aligned with the Sustainable Development Goals (SDG6) and the West African Water Resources Policy (2008). This policy sets out objectives, means and actions to improve the management of water resources in West Africa in order to put water at the service of sub-regional development. This is achieved by guaranteeing access to water to support economic growth and ensuring the health of aquatic ecosystems.

#### 1.5.4 Presidential Address - 14<sup>th</sup> of May, 2018

The presidential address recognizes that the current trends in the management of the country's **water resources are insufficient** for sustainability. Therefore, the address pledges " ...to protect all major watershed areas against deforestation and other environmental problems and also to undertake reforms in the water sector including unbundling water generation from distribution as it is in **the energy sector to improve on efficiency and cost recovery...**" (This is also echoed in the New Direction Manifesto in pages 84-85.

#### 1.5.5 The National Water Resources Management Agency (NWRMA)

The NWRMA Act No.5 of 2017 was passed by parliament in August 2017. The NWRMA is as by law established, charged with the mandate for ensuring the management and **sustainability of the country's water resources among the competing users, while at the same time ensuring that the resources are also protected, developed, conserved with a view to first catering for the basic human needs of the people.** In order for the NWRMA to achieve this, it must take into account the following:

- adopting natural river basin and aquifer boundaries as the basic units of management of water resources
- protecting the water resources for sustainability of the resource and protection of aquatic systems and recognizing the polluter-pays principle

- providing for existing customary uses of water and avoidance of significant harm to other water users
- promoting the efficient and beneficial use of water resources in the public interest
- promoting community participation and gender equity in the allocation of water resources
- promoting conservation and recognizing the economic value of water resources
- reducing and preventing pollution and degradation of water resources
- meeting international obligations in protecting and managing transboundary water bodies (Section 2 (1) of the Act).

Therefore, the key reason for establishing the NWRMA is to remove water resources management from the responsibility of water supply companies like SALWACO and Guma Valley and allow these service providers to concentrate on their core responsibility of providing potable drinking water services to the people. The establishment of the NWRMA will also prevent the unrestrained allocation of water resources over the years done by different MDAs for various uses - such as agriculture, mining, energy, transportation, aquaculture, environmental and other industrial uses without due consultations, co-ordination in order to respect the ethos of water resources management and invariably the economic benefit that would accrue to the state.

This is the first strategic plan of the National Water Resources Management NWRMA (NWRMA) with the Ministry of Water Resources providing policy oversight. This strategic plan is aligned with the National Water Resources Management NWRMA Act No. 5 of 2017 (which emanates from the National Water and Sanitation Policy of 2010), the Sustainable Development Goals (SDG 6), the National Development Plan (PRSP4), the **Ministry of Water Resources' five years** strategic plan. The strategic plan will among other things be used to define the services it will provide to both internal

and external partners and will also serve as a platform on which the progress of the NWRMA's activities will be monitored and evaluated.

## 1.6 Purpose of the NWRMA-SDP

This strategic development plan came as a result of stakeholder consultation, **expert interviews which identified and arrived at the goals and strategies of this document.**

This strategy is comprehensive and encompasses a wide range of activities that sets out key priorities for the period 2019 - 2023. It also takes into account international best practices of the principles of Integrated Water Resources Management IWRM. The strategic plan will collaborate extensively with both the public and private sectors, including civil society, development partners and donors to achieve its desired goals.

The strategic plan also aims to guide operations and to provide a platform for collaboration to address crucial water resources management challenges within catchment areas.

The strategic plan is structured into five chapters as follows:

- Chapter 1: Brief description of the strategy and its purpose
- Chapter 2: Description of water resources potential in Sierra Leone and NWRMA challenges and opportunities
- **Chapter 3: Outline of the NWRMA 's vision and mission statement, core values and goals**
- Chapter 4: Describes the strategies for achieving the five-year goals in line with the NWRMA Act No.5 of 2017
- Chapter 5: Presents the implementation strategy, and concludes with possible assumptions, risks and risk management.

The annexes consist of detailed logical framework, implementation time frame, budget and the NWRMA's **logo description.**

This strategic development plan is anchored on the following broad principles:

- Attainment of efficient and effective water resources usage in order to actualize both the social and economic interests.
- Accessibility to water resources in an equitable manner and the benefits therefrom.
- **Sustainable protection, usage, development and management of Sierra Leone's water resources**

The specific principles are as follow:

- The polluter pays and user pays principles.
- **The property and control in the country's water resources are vested in the government and people of Sierra Leone and the same are managed on trust by the NWRMA.**
- **It is a right for water resources to be provided to meet the people's basic needs and maintaining environmental sustainability, whilst at the same time affirming that all other uses of the country's water resources are subject to regulatory procedures.**
- Suitable regional and local institutions shall have the responsibility and authority in **the management of the country's water resources with a balanced gender mainstreaming approach.**
- Optimizing the living standards of all and the economy as a whole through the **productive use of the country's water resources.**
- Water resources are a finite resource, therefore they need to be managed, developed and used in a sustainable manner

## Chapter 2 – Water Resources Management, Challenges and Opportunities

### 2.1 Water Resource Potential in Sierra Leone

Sierra Leone has an area of 71,620 km<sup>2</sup> with an estimated population of about 7,092,113 million. The country is drained by nine major rivers, with lengths ranging from 90 km to 430 km and watershed areas ranging from 612 km<sup>2</sup> to 19,022 km<sup>2</sup> as shown in Figure 1. The total mean annual renewable water from all the watersheds is estimated at 160 km<sup>3</sup> (160,000 million cubic meters) (MWR Water Security Project 2015). Four of these watersheds are shared with neighbouring countries of Liberia and Guinea. The average annual rainfall is more than 3000 mm and the climate is tropical with temperature ranging from 22°C to 35°C.

Nonetheless, despite an abundance of water resources in Sierra Leone, the distribution is uneven. Hence, in the dry season the water resources are scarce to meet water needs in various parts of the country.

#### 2.1.1 Surface Water

Sierra Leone has abundant surface water resources that consist of four major perennial rivers, Little Scarcies, Rokel, Jong, and Sewa that flow north-east to south-west, **draining most of the country's land** surface. The Rokel is the longest river (424 km), with its headwaters beginning in the highlands of Guinea. The largest river basin is the Sewa (19,022 km<sup>2</sup>). Other rivers include Moa, Waanje, Mabole, Pampana, Bagbe, Mongo, Mano, Jong, Bagru, Teye, Tabe, Male, Yambatui, Bafin, and Kukuli. Four of these basins are shared with the neighbouring countries of Guinea and Liberia. These are the Great Scarcies, Little Scarcies and Moa shared with Guinea, and Mano River shared with Liberia.

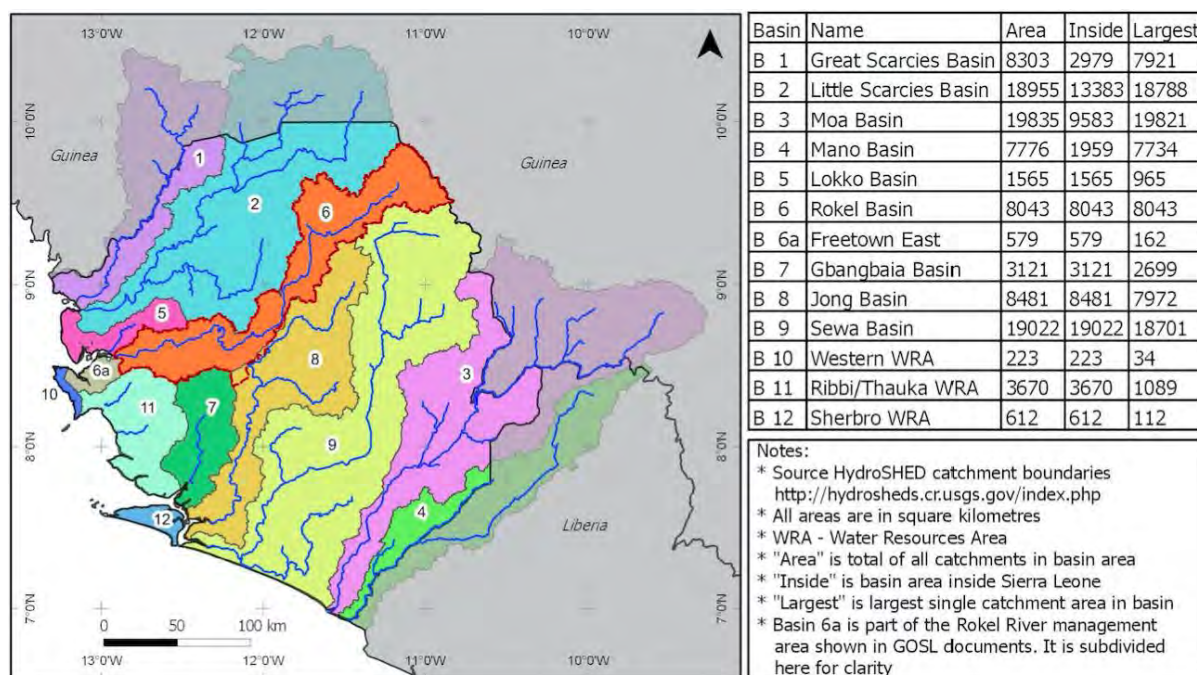


Figure 1: River basin map of Sierra Leone (Source: MWR Water Security Project)

### 2.1.2 Groundwater

Groundwater is a significant source of safe drinking water in Sierra Leone, although **very little information on the aquifers' potential is known. Between 2016 and 2017,** Hydro Nova (USA) conducted an extensive survey on all existing hydrogeological data in Sierra Leone. The project indicated that the majority of the 28,900 wells from the WASH baseline national survey are located in unconfined aquifers of limited extent and of three different types: perched, along with large river banks, porous, widely distributed across the country and along the coast and fractured in the crystalline basement. The latter are generally deep and underlying the surface formation in the lateritic soils.

The water table flows from NE to SW following the main watercourses and is generally correlated to the topography. The crystalline basement is the common layer at the bottom of the aquifer at a depth of 15 – 80 m. Well yield usually is in the range of 0.3 - 1.5 l/s and exceptionally 3 - 6 l/s. Transmissivity is also low (2 - 3 m<sup>2</sup> /d). As a

consequence, many boreholes must remain un-pumped for some hours in order to recover an exploitable water level.

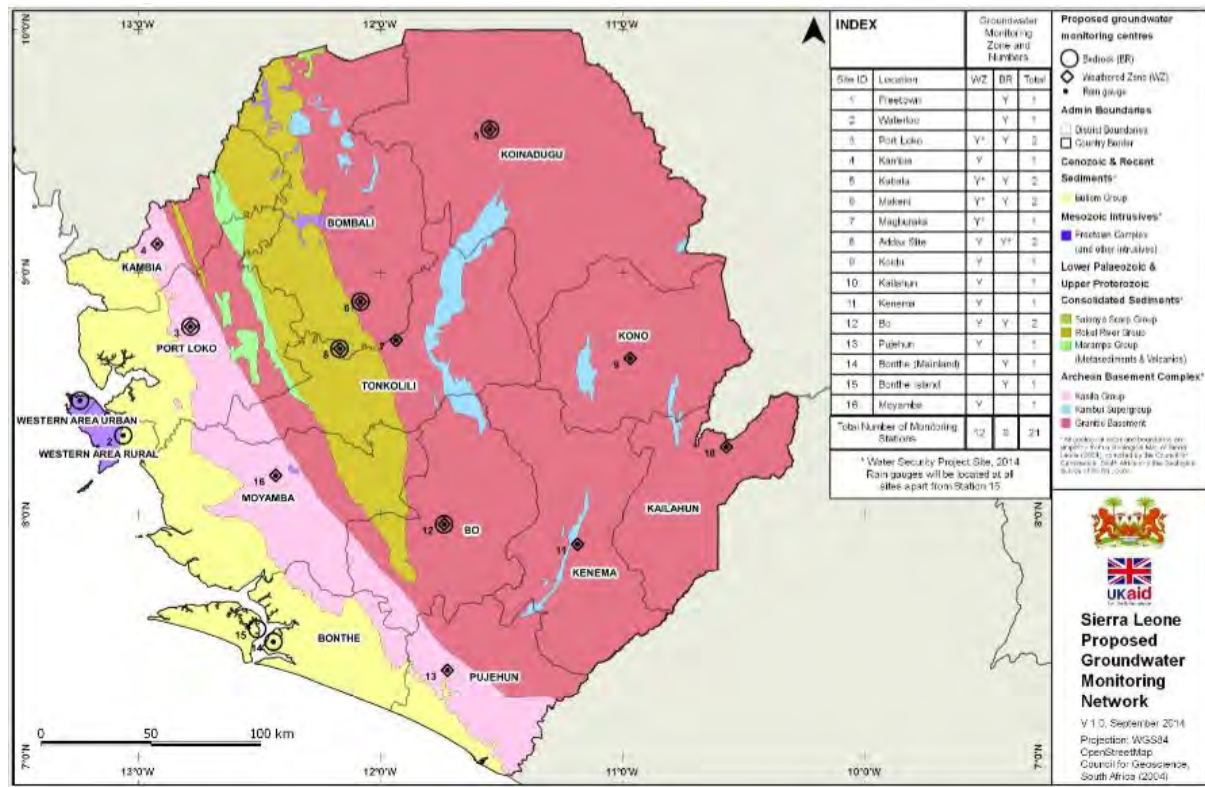


Figure 2: Geology and proposed groundwater monitoring network (Source: MWR Water Security Project)

### 2.1.3 Trans-Boundary Water Resources

Sierra Leone shares most of its surface water resources with its neighbours of Guinea and Liberia. These include Great Scarcies, Little Scarcies, Moa shared with Guinea and Mano River shared with Liberia which highlights the significant inter-dependence and management implications between these countries. In the past there have been insufficient investments in hydraulic and reservoir facilities for the control of flooding, generation of power, sustainable development of irrigation, industrial, rural and urban water supply. Consequently, this has resulted in water resources degradation owing to porous catchment management, water allocation methods and pollution control. It is therefore necessary that such water resources are jointly managed within agreed parameters for equitable usage, otherwise conflict may be eminent.

Some efforts have been made over the years. For example, on the 27<sup>th</sup> day of November 2015, the 4<sup>th</sup> Session of the ministerial follow-up committee for the permanent framework for IWRM coordination and monitoring in West Africa was held in Dakar. Among other deliberations, the session agreed for the promotion of trans-boundary basin institutions in West Africa. The Mano River Union (MRU) is therefore on the verge of setting up the Mano River Trans-boundary River Basins Authority.

Furthermore, the 2016 MRU Bridge Project promoted transboundary water resources management through the formation of transboundary water resources management committees, the formulation of byelaws and protocol of agreement between Guinean, Liberian and Sierra Leonean. The project established a transboundary water resource management committee for the Mano River Basin and plans are underway to establish a similar committee for the Moa-Makona and the Scarcies River Basins.

## 2.2 Challenges of Water Resources Management in Sierra Leone

Water resources management in Sierra Leone is faced with numerous challenges and key amongst these are:

- Lack of information related to the distribution, scale and use of water resources severely impacts water resources planning, allocation and monitoring.
- Inadequate and reliable financing for the protection, conservation and management of water resources.
- Poor land management affecting the rehabilitation and protection of catchment areas.
- Increasing water demand due to population growth and urbanization.
- Changing weather patterns and increasing likelihood of extreme weather events due to climate change.
- Poor stakeholder involvement and awareness.
- **Water is viewed as "from God" so users typically do no pay.**

## 2.3 SWOT ANALYSIS

The analysis of the Strengths, Weaknesses, Opportunities, and Threats (SWOT) of the NWRMA is summarized in Table 1 below.

Table 1: SWOT analysis of NWRMA

Strengths	Weakness
<ul style="list-style-type: none"> <li>• NWRMA Act 2017 exists</li> <li>• Substantive Director-General &amp; other staff appointed</li> <li>• Staff appointed have experience in IWRM</li> <li>• Ability for sector coordination and implementation of IWRM activities</li> <li>• Clearly defined roles and responsibility of NWRMA</li> <li>• Availability of institutional knowledge</li> <li>• Positive attitude towards work</li> <li>• Availability of some hydrological equipment and data</li> </ul>	<ul style="list-style-type: none"> <li>• No regulations enacted</li> <li>• Inadequate coordination among IWRM actors</li> <li>• No technical standards for water resources management</li> <li>• Inadequate human and institutional capacity</li> <li>• Limited awareness of water resources management</li> <li>• No operational logistics and tools</li> <li>• Inappropriate office accommodation</li> <li>• Insufficient budget</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Strong political will at the highest level of government to ensure sustainable water resources management</li> <li>• More focused attention on water resources management issues</li> <li>• Donor commitment to support water resources management activities</li> <li>• Benchmarking opportunities both nationally and internationally</li> </ul>	<ul style="list-style-type: none"> <li>• Pressure for land leading to the destruction of critical watersheds and catchments</li> <li>• Increasing pressure on water resources from the growing population</li> <li>• Insufficient knowledge of water resources management among stakeholders</li> <li>• High level of vulnerability to climate change</li> <li>• Non-compliance with the rules and regulations by some stakeholders</li> <li>• Conflicting or overlap in mandates</li> <li>• Inadequate and untimely release of subvention (i.e. budgetary allocation) to implement programmes</li> <li>• Competing with MWR for implementation of programmes</li> </ul>

## Chapter 3 – Vision, Mission, Core Values and Goals

### 3.1. Vision

In line with the national sector strategic development plan, the vision adopted by the NWRMA is:

**“TO BE ONE OF THE LEADING WATER RESOURCES MANAGEMENT AGENCIES  
IN WEST AFRICA”.**

Cognizant of the fact that in Sierra Leone, there is only one NWRMA responsible for **the exclusive management of the country’s water resources**, the NWRMA vision challenges the Agency to work towards being considered among the leading water resources management agencies in West Africa.

### 3.2. Mission

In order to achieve this vision, the mission statement for NWRMA is:

**“TO REGULATE AND EFFECTIVELY MANAGE WATER RESOURCES, THROUGH  
INNOVATIVE LEADERSHIP TO ENSURE THE PROVISION OF BASIC  
SERVICES WHILE PROMOTING EQUITABLE AND INCLUSIVE ECONOMIC  
GROWTH**

The NWRMA mission statement, emphasises the **key words like “regulate”, “effectively manage” and “innovative leadership”**. The **“innovative leadership”** has been considered germane, because **in Sierra Leone today, most of the country’s public sector management problems are attributable to the lack of innovative leadership**.

### 3.3. Core values

The following lists the core values of the NWRMA:

- Integrity: Being fair, honest and ethical is of upmost important when in public service.

- Transparency: We value open and trusting relationships with the public, government and donor partners and will openly share information to foster this.
- Teamwork: The best solutions come when we work together.
- Accountability: We are mindful that we are not on our own and are not here forever.
- Professionalism: It is what distinguishes NWRMA services from others.
- Efficiency: We make it happen irrespective of the circumstance.
- Responsiveness: Count on us even when you least expect us to respond.
- Innovation: Creative and innovative management solutions for effective regulation.

### 3.4. Goals

The overall goal of the NWRMA is to effectively and sustainably manage and regulate **the country's water resources in order to achieve equitable** use of the water resources among the competing users for socio-economic development.

The specific goals include:

1. Regulatory and institutional framework for managing and protecting water resources, reflecting the principles of IWRM, developed. Since NWRMA is mandated to regulate and **manage the country's water resources, a** clear framework is required in the context of IWRM to achieve effective water governance. Eight (8) strategic outputs will be realized through a range of different activities as summarised in Table 2. Key priority area is to establish the Agency and popularise relevant legislative instruments, (regulations and guidelines), through the development a comprehensive communication strategy and operational plan for its roll-out.
2. Effective water resources assessment and monitoring system in place and operational. A comprehensive and accurate water resources management database and information system is essential for water resources planning, allocation and monitoring and hence promote good water governance. The key priority is to ensure there is a functional hydrological monitoring network and

national water quality standards established. Three key outputs will be achieved under this strategy.

3. Watersheds and catchments protected against deforestation and other environmental problems. The protection of the ecosystem is fundamental to the quality and quantity of water resources. This strategy will look at the delineation and restoration of water catchment areas and the setting up of basin boards, catchment and sub-catchment committees. Two key outputs will be achieved under this strategy with related activities.
4. Effective framework for WRM capacity development and knowledge management. To make informed decisions and achieve sustainable WRM, adequate knowledge management systems must be put in place through effective capacity development. This framework will support the sustained development of appropriate skills and information for WRM. Three major outputs with several activities will be carried out to realise this strategy.
5. An effective framework for water-related disaster management and climate change mitigation and adaptation in place and implemented. Increasing climate change and climate variability have been one of the critical factors affecting water accessibility in terms of both quantity and quality with the potential of putting the populations at higher risk as a result of water-related disasters such as floods, drought etc. This framework will ensure that actions taken are complementary and not contradictory, and that water resources management is integrated to ensure climate change is mitigated and is adaptive to adverse effects. Two key outputs with several activities will be carried out to realise this strategy.
6. An effective framework for management of Trans-boundary water resources. This framework will support the establishment of transboundary **water cooperation and integrate it into the country's international relations and regional integration strategies**. Two key outputs with various activities will be carried out to realise this strategy.

## Chapter 4 – NWRMA SDP Results Framework

### 4.1 Specific Goals & Outputs

This chapter lists the identified outputs and key activities to achieve each specific goal listed in Chapter 3.

*Table 2: Specific goals and associated outputs of NWRMA*

Specific Goals	Outputs
1. Regulatory and institutional framework for managing and protecting water resources, reflecting the principles of IWRM, developed	1.1: An operational framework for National Water Resources Management Agency developed
	1.2: Parliamentary approval for regulatory framework (legal instruments) on WRM, secured
	1.3: Water Resources Management Policy and Development Master Plan (NWRMP & DMP), mainstreaming gender concerns, developed.
	1.4: Effective WRM sector coordination and Monitoring & Evaluation framework develop and operationalized
	1.5: An effective NWRM communication strategy in place and implemented
	1.6: Effective and adequate financing mechanisms / arrangements for sustainable WRM developed
	1.7: Communities and civil society organizations effectively engaged to participate in WRM activities
2. Effective water resources assessment and monitoring system in place and operational	2.1: Functional hydrological network and water resources information system
	2.2: National Raw Water Quality Standards established and Surveillance and Monitoring, processes, Institutionalized
3. Watersheds and catchments protected against deforestation and other environmental problems	3.1: Watersheds, catchments and sub-catchments, mapped and catchment areas in critical danger, identified
	3.2: Thirty percent (30%) catchment areas in critical danger, protected / restored / regenerated.
	3.3: Clearly defined roles and responsibilities guiding Basin boards, water catchment and sub-catchment management committees in the efficient.
4. Effective framework for WRM capacity development and knowledge management	4.1: NWRMA comprehensive Capacity Building Strategy (CBS) informing short to medium-term institutional strengthening and Staff recruitment, knowledge and skills development
	4.2: Action research & development guiding evidence based WRM programing
5. An effective framework for water-related disaster management and climate change	5.1: Climate change risks and vulnerabilities mainstreamed into WRM policy and planning processes.

Specific Goals	Outputs
mitigation and adaptation in place and implemented	5.2 Water Resources related Climate Change disaster mitigation preparedness plan guiding response efforts.
6. Effective framework for management of shared waters - Trans-boundary water resources	6.1: Trans-boundary water cooperation framework in place and <b>integrated into the country's international relations and regional integration strategies</b>
	6.2 International financial obligations met, adopt treaties and conventions, participate and implement in international programs and plans (e. g. MRU, WRCC-ECOWAS, world water week, WMO, COP, GWP/WA and AMCOW etc)

## 4.1 Outputs & Key Activities

The following 6 sections will present the strategies for each of the 6 specific goals of NWRMA. Additional descriptions will be provided for some of the identified strategies

Specific Goal 1: Development of regulatory and institutional framework

There are eight outputs under SG 1, these and their associated activities are listed in the following table:

Table 3: Objectives and Strategies for Strategic Goal 1

Outputs	Key Activities
1.1: Operational framework for the National Water Resources Management Agency, Developed	1.1.1: Procure international consultancy services for development of NWRMA Operational framework
	1.1.2: Develop NWRMA staff recruitment workplan
	1.1.3: Prepare job descriptions for senior, middle level and Junior staff positions / managers
	1.1.4: Develop a comprehensive Capacity Building Strategy (CBS) to support the roll-out of the NWRMA Act-2017
	1.1.5: Construct one national and 4 Regional NWRMA offices
	1.1.6: Procure 16 Vehicles and 15 motorbikes, 4 motorized boats for river monitoring
1.2: Parliamentary approval for regulatory framework (legal instruments) on WRM, secured	1.2.1: Procure Technical Assistance for development of regulatory framework
	1.2.2: Conduct national and sub-national level consultations to <b>secure stakeholders' input into development of water rights</b>
	1.2.3: Map raw water users and drilling companies nationwide
	1.2.4: Prepare and operationalize a framework for a national drilling log database

Outputs	Key Activities
	1.2.4: Secure parliamentary approval for legislative <b>instrument on water rights permit and driller's license</b> regulations
1.3: Water Resources Management Policy and Development Master Plan (NWRMP & DMP), mainstreaming gender concerns, developed	1.3.1: Procure Technical Assistance for development of a gender sensitive NWR Management Policy and development of Master Plan 1.3.2: Organise <b>Stakeholders' workshops on preparation of a</b> gender sensitive NWRM policy and master plan implementation 1.3.3 Organise roundtable meetings to mobilise resources for implementation of the NWR master plan
1.4: Effective WRM sector coordination and Monitoring & Evaluation framework develop and operationalized	1.4.1: Develop NWRM sector Coordination Framework 1.4.2: Establish & operationalise inter-ministerial technical working group on IWRM 1.4.3: Organise TWG partnership coordination workshops/ meetings every last Wednesday of each month 1.4.4: Develop and Operationalize NWRM sector M & E Framework
1.5: An effective NWRM communication and ICT strategy in place and implemented	1.5.1: Develop a NWRM public education and awareness creation plan 1.5.2: Mobilize watershed communities to generate, implement and own WRM plans 1.5.3: Prepare and publish biennial (2-yearly) national water resources status reports and News letters 1.5.4 Use ICTs to promote WRM activities (e.g. phone SMS in mobilization including weather and climate alerts
1.6: Effective and adequate financing mechanisms / arrangements for sustainable WRM developed	1.6.1: Develop a NWRM financing strategy and resources mobilization plan. 1.6.2: Organize a donor roundtable for resources mobilization 1.6.3: Establish a NWRM fund and develop innovative mechanisms for generating and managing non-budget water revenue.
1.7: Communities and civil society organizations effectively participate in WRM activities	1.7.1: Map and identify capacity gaps among target / potential CSOs engaged in WRM. 1.7.2: Development appropriate Training Modules and train CSOs in WRM activities 1.7.3 Document and Promote WRM best practice through Networking, workshops, award schemes and experiential learning visits (local and international 1.7.4 Facilitate development of local bye-laws including monitoring and compliance protocols for effective Community-based WRM.

Additional notes:

Various finance options suitable for NWMRA such as water pricing, levies & fee, government are listed in Annex 5

Specific Goal 2: Water resources assessment and monitoring

There are four outputs under SG 2, these and their associated activities are listed in the following table:

Table 4: Objectives and Strategies for Strategic Goal 2

Outputs	Key Activities
2.1: Functional hydrological network and water resources information system	2.1.1: Inventorize existing hydrological infrastructure and assess their appropriateness and functionality (reflect manpower and equipment)
	2.1.2: Review and update existing water resources data and information system for consistency with WRIS needs
	2.1.3: Prepare a national water resources profile complete, with (quality and quantity)
	2.1.4 Develop capacity of local and national institutions in water resources data collection, reporting and monitoring
2.2: National Water Quality Standards established and Surveillance and Monitoring, processes, Institutionalized	2.2.1: Construct and equip 2 Regional laboratories
	2.2.2: Construct and equip 1 National Reference WQ laboratory
	2.2.3: Support for routine Surveillance and WQ monitoring
	2.2.4: Develop, gazette and popularize national water quality standards among WRM stakeholders

Additional notes:

2.3.2: ***Enforce the "Polluter Pays" principle with penalties and restorative orders for polluters of different scales:*** The NWRMA will enforce the "Polluter Pays" principle with penalties and restorative orders for polluters of different scales. This will also be followed by remediation strategies that will be developed at the basin and catchment

levels with a view to addressing the ways needed to improve the condition of impaired and degraded water resources.

*2.4.1 National classification of water resources:* There is no uniformity in the **distribution of the country's water resources be it in quantity and quality as well as** in both space and time. Thus, to protect and utilize all water resources to the same level is economically not justifiable. It is therefore important in order to judiciously manage the water resources to classify them. When this is achieved, water resources shall be placed into different management classes and each of these classes showing the different degrees of utilization and protection.

Elements of the classification method shall entail:

- All surface and groundwater resources should be inventorized.
- All inventorized water resources shall have a management class assigned to them.
- All water resources users uses shall be inventorized bearing in mind the quantities used, quality and the purpose.
- For each class of water there shall be a specification of measurable parameters such as physical, chemical and bacteriological quality.

In order to guide the management of water resources we will set targets known as Resource Quality Objectives (RQOs). They will serve as a function of the management class upon agreement either to represent a kind of water resource or rather for a particular geographical element of the water resource. Where the management class represents improvement on the impact of a certain water resource or thresholds or protection nets that show the limit of tolerable impact, the RQOs may be considered as goals to pursue. Sometimes they are either descriptive or numeric and this could be any conditions which may need to be fulfilled in a bid to ensuring that the water resource is preserved in an enviable and sustainable status. A balance between the desire for the protection and sustainability of water resources on the one part, and the desire to use them on the other part must be pursued in the determination of management objectives for the resource.

2.4.2 *The reserve water:* The quantity and quality of water needed for the satisfaction of basic domestic needs for all those who may rely on same abstracted from a particular water resource, and the protection of aquatic ecosystems with a view to securing a sustained ecological development and use of the water resource is what is known as the reserve water. This reserve water is prioritized above all other water uses and the conditions of the reserve must be seen to be fulfilled otherwise water cannot be allocated for other uses. However, in a situation where water has already been allocated for use, the condition of the ecological reserve may be fulfilled with time in the future by the users.

Reserve water strategies are:

- The existing groundwater and surface water data in terms of quantities and the water allocations already in existence shall be analyzed and updated.
- A projection of domestic water demand shall be determined.
- Capacity and methods for the determination of reserves shall be developed.
- The reserve water shall be catered for by reviewing all existing water allocations.

Other strategies include:

- Schools and community monitoring of rainfall by employing simple rain gauges in conjunction with MET Agency and making use of observers on a voluntary basis.
- Using automatic equipment for groundwater monitoring with the NWRMA's trained staff.

### Specific Goal 3: Protection of Watersheds and Catchments

There are 3 outputs under SG 3, these and their associated activities are listed in the following table:

*Table 5: Objectives and Strategies for Strategic Goal 3*

Output	Key Activities
3.1: Watersheds, catchments and sub-catchments, mapped and	3.1.1: Conduct nation-wide Mapping of watersheds and catchments including comprehensive analysis of their

Output	Key Activities
catchment areas in critical danger, identified	ecosystems for purposes of water resources protection/conservation
	3.1.2: Organise workshops to share results of watershed mapping and agree on watersheds and catchments in critical danger for rehabilitation/restoration and establishment of Green-Belt
3.2: Thirty-percent (30%) catchment areas in critical danger, protected / restored / regenerated.	3.2.1: Mobilise and sensitise local communities, leaders and stakeholders on catchment and sub-basin management approaches, roles and responsibilities
3.3: Clearly defined roles and responsibilities guiding Basin boards, water catchment and sub-catchment management committees in the efficient management of water resources.	3.3.1 Support basin boards to develop regulations and bylaws for IWRM
	3.3.2 Facilitate establishment of basin boards, Catchment & Sub-catchment Committees / Structures
	3.3.3 Engage and incorporate BWMA into NWRMA

Additional notes:

*3.2.1 Mobilize and sensitize local communities, leaders and stakeholders on basin setup, catchment management approaches, roles and responsibilities:* In order to have a sustained integrated catchment planning, it is the ideal for the land, people and water resources to be assessed along natural river flow frontiers or catchments in an interactive atmosphere.

Recent approaches in planning land/water use is by using river catchments/basins as the planning hub. Therefore, in order to avoid duplication of services rendered and also ensure coordination, all planning bodies should adopt the catchments/basins as the planning hub. This approach postulates full participation of stakeholders in every layer of the planning. Owing to the fact that the catchments/basins are as onerous in their dimensions as in their diversities, with an expanse of about thousands of kilometers, it is prudent for the management arrangements to be decentralized as far as the sub-catchment tiers in order to enhance the planning of the catchments/basins.

The issues, concepts and principles in catchments/basins planning should be made known to the users for effective stakeholder involvement. People with diverse expertise should combine their skills and efforts in planning for land and water resources use with an integrated approach. However, the catchments/basins plans should be treated with flexibility so that both spatial and temporal dimensions are captured and accommodated. The output of every catchments/basins planning is to respond to the **needs of the users and also take into cognizance the environment's socio-economic condition.**

#### Specific Goal 4: Capacity Development and Knowledge Management

There are 2 outputs under SG 4, these and their associated activities are listed in the following table:

*Table 6: Objectives and Strategies for Strategic Goal 4*

Outputs	Key Activitiess
4.1: NWRMA comprehensive Capacity Building Strategy (CBS) informing short to medium-term institutional strengthening and Staff recruitment, knowledge and skills development	4.1.1: Procure specialist services for development of NWRMA CB Strategy .
	4.1.2: Support for institution strengthening and staff development in accordance with proposed NWRMA CBS
	4.1.3: Support for Documentation and sharing of Best Practice, In-country and across country experiential learning visits
4.2: Action Research & Development guiding evidence-based WRM programing	4.2.1: Support for Action Research and Development studies

#### Specific Goal 5: Water-related disaster management and climate change mitigation and adaptation

There are 2 outputs under SG 5, these and their associated activities are listed in the following table:

Table 7: Objectives and Strategies for Strategic Goal 5

Outputs	Key Activities
5.1: Climate change Risks and vulnerabilities mainstreamed into WRM policy and planning processes.	5.1.1: Prepare a WRM related climate change risk / vulnerability profile for Sierra Leone
	5.1.2: Raise climate change risk / vulnerability awareness targeting most vulnerable communities.
	5.1.3: Develop and implement a national water security plan
5.2: Water Resources related Climate Change disaster mitigation preparedness plan guiding response efforts.	5.2.1: Develop and roll-out a preparedness response plan for WRM disaster related to Climate Change
	5.2.2: Strengthen capacity of national and local councils, including civil society, for disaster prediction and response, with emphasis on water resources disasters

Additional notes:

Various strategies for preventing, responding and recovering from flood and droughts are listed in Annex 6

Strategic Goal 6: Management of trans-boundary Water Resources

There are 2 outputs under SG 6, these and their associated activities are listed in the following table:

Table 8: Objectives and Strategies for Strategic Goal 6

Outputs	Key Activities
6.1: Trans-boundary water cooperation framework in place and <b>integrated into the country's</b> international relations and regional integration strategies	6.1.1: Support for study visits for staff of NWRMA and political leaders to other countries to study best practices on trans-boundary WRM.
	6.1.2: Share water resources data (quality and quantity)
	6.1.3: Develop a detailed stakeholder analysis of the water sector in the targeted transboundary basins & determine training needs of local stakeholders involved in the Trans-boundary Diagnostic Analysis (TDA) and Stakeholder Action Plan (SAP) process and develop a training programme.

Outputs	Key Activities
	6.1.4: Implement training sessions concerning the methodological approach and the planning process for preparing a TDA and SAP in a transboundary basin.
	6.1.5: Organise national training workshops for water governance champions on themes including leadership skills, action planning, policy influencing and gender mainstreaming in each targeted basin (Moa/Makona, and Great Scarcies/Kolanté)
	6.1.6: Organise training and sensitisation workshops for Ministry of Foreign Affairs and International Cooperation staff on regional Trans-boundary cooperation
	6.1.7: Develop a national guide on shared waters for Sierra Leone diplomatic missions /Ministry of Foreign Affairs and Ministry of Internal Affairs.
6.2 International financial obligations met, adopt treaties and conventions, participate and implement in international programs and plans (e. g. MRU, WRCC-ECOWAS, world water week, WMO, COP, GWP/WA and AMCOW etc)	6.2.1: Participate in regional WRM meetings and activities with the aim of sharing water quality and quantity data.
	6.2.2: Adopt international water convention

Additional notes:

Various strategies for preventing, responding and recovering from flood and droughts are listed in Annex 6.

## Chapter 5 – Implementation Strategy

This section looks at the processes, mechanisms and resources required to transform the strategic outcomes and outputs into actual results. This strategy will be implemented through a multifaceted institutional structure consisting of ministries, departments and agencies at both national and local level, research and training institutions as well as an effective inter-sectoral coordination structures that brings together stakeholders from the public, private, donor and development partners, media and civil society.

Several priority areas have been set out in this strategy which will assist the NWRMA achieve its vision of becoming one of the leading water resource management agencies in West Africa.

Both the New Direction government and donor partners are keen on strengthening the NWRMA for water resources management in the country, therefore the NWRMA will take proactive strides in engaging them accordingly.

It is the NWRMA's considered view that this strategy will be launched in quarter 2 of 2019. In order to exhibit a correlation between the NWRMA's ambition and the implementation, the NWRMA will ensure that this strategy is made available to the public and more especially to its stakeholders after it launch.

Finally, the NWRMA is entreating all donors and other implementing bodies to match their development agendas particularly with water resources management to the NWRMA's. The NWRMA is the only mandated body established by law to regulate and manage water resources. Collaboration is very important under the New Direction and by so doing development programmes are not duplicated and resources wasted.

## 5.1 The Comprehensive View Point

This strategy otherwise referred to as the holistic principle calls for adopting a comprehensive approach in water resources management. Given the fact that water resources can have multiple potential uses, with each invariably having some implication for the other, adopting the comprehensive viewpoint allows for managing activities to meet both associated socioeconomic and environmental objectives to ensure not just the optimal use of the resource, but importantly the need to do so in a sustainable manner.

Striking the right balance between different and competing uses of the resource, in the case where demands for, hydroelectric power generation, irrigation development and flood control or the preservation of a particular ecological zone, are at play, will have the positive effect of potential sustainability of the resource. The other implication is that integration of water planning with overall economic and social planning can potentially also lead to the efficient use of the resource especially as there are interrelationships between water development and the development of other resources.

The Agency takes the strong view that water resources management requires inputs from a wide range of disciplines such as economics, politics, geography, sociology, and law.

In its **efforts towards ensuring effective management of the Country's water resources** the Agency will adopt and promote the comprehensive viewpoint approach because, it presents a better opportunity for understanding the links and interactions between, humans and the ecosystem for efficient water resources management.

## 5.2 Recognition of Water as an Economic Good

The fourth Dublin protocol (1992) on WRM, recognizes that water has an economic value in all its competing uses and calls for it to be treated like any other natural resource, such as fisheries or minerals. Generally, the argument is that the owner (the government, community or private party) should charge satisfactory fees for water use, ensuring consistency between the price of the services provided and the quantum of the resource.

Free market economic principles argue that water should be allocated among competing users or uses on the basis of the economic value derived. Consistent with this viewpoint, it stands to reason that based on the value of the resource to the user, market forces are expected to ensure that water is allocated to its highest value use. Invariably, this argument finds justification from the understanding that, price policy can bring about allocation efficiency and help maintain the sustainability of the resource.

NWRMA is acutely aware of the fact that in the management of water resources in an integrated manner where the economics, legal and environmental aspects complement each other, increased prices tends to have a positive knock-on effect on equity, efficiency and sustainability of the resource. In the same vain, the Agency is also fully aware of the inherent dangers of promoting unchecked full-cost pricing. The commitment to full cost recovery in water sector, often conflicts with the commitment **to 'a better life for all'. If indiscriminately implemented, full-cost pricing has the potential of excluding the poor from quality service while providing better services for the wealthy few in society.**

NWRMA is therefore fully committed to the idea that there must be appropriate use of management instruments to achieve economic efficiency in water usage and this must be done in an enabling environment through legislation and policies to address equity issues. The Agency will in consequence seek to promote calls for the

construction of appropriate tariff structures to meet different social, political and economic goals in different situations. A solution to this problem is the development of two-tier systems, based on the ability to pay principle consistent with the need to make the most appropriate choices about the allocation and uses of water resources.

### 5.3 Stakeholder Participation

There is a general consensus in the social development literature that public involvement or stakeholder participation is key to ensuring equity in access to services. This strategy has slowly and steadily taken firm hold to replace the discredited long held view that planners and politicians could accurately determine what the general masses wanted and how they would react to what is provided. Effective stakeholder participation is now seen as centrally important in the creation of sustainable livelihoods, promotion of good governance and the alleviation of poverty.

**The strategy emphasizes “active citizenship” and “community empowerment”** in seeking to ground the argument that participation contributes to good water governance at the local level. Active community participation is also credited with enhancing synergy in pursuing multiple development goals, while at the same time enhancing the potential for service sustainability and improved equality of access for the poor to adequate supply of water as an example.

Recognizing the potential implication for varying responses reflecting local socio-economic contexts, NWRMA will seek to promote appropriate water resources management legislation, policies and administrative institutions to enhance popular participation of all stakeholders, through effective means of public engagement.

### 5.4 Gender Sensitivity

Without specific attention to gender issues and initiatives, social development efforts can inadvertently reinforce inequalities between women and men and even increase

imbalances. Participatory processes in IWRM initiatives do not automatically recognize inequalities and differences between women and men. Local socio-cultural power differentials make it difficult for some people to voice opinions that contradict general views and may even affect who participates in decision making.

With the recognition that participation by both men and women as equal partners is essential for sustainable development, securing a comprehensive and total stakeholder participation in the management of the water resource invariably therefore calls for gender sensitivity in all phases and levels of the process. Forums such as the International Drinking Water Supplies and Sanitation Decade Review (1990), the Dublin Conference (1992), the World Summit on Sustainable Development (1992), the Beijing Conference on Women (1995) and the World Water Conference (2000) have all, **endorsed this principle. Women's pivotal role as providers and users** of water and by extension, management and safeguarding of the resource must be acknowledged and reflected in the institutional arrangements for the development and management of water resources.

The need for the Agency to prioritize gender sensitive planning for water resources management underlines the need for:

- i. understanding the differences and relations among and between women and men in each specific water management context;
- ii. **incorporating women's and men's perspectives, needs and interests in all** management initiatives and promoting the advancement of women (i.e. reduce gender inequalities); and
- iii. using participatory approaches that facilitate the equitable participation of women and men especially at decision-making levels.

Water resources, if effectively managed at the lowest appropriate level serves to better the wellbeing of communities. It is common knowledge that communities in any geographic space are by no means homogenous entities. These rather, usually comprises individuals and groups who command different levels of power, wealth, influence and ability to express their needs, concerns and rights, with competing interests and tend to relegate those at the lowest end of the power spectrum (often the poor men and women) to unequal terms of access especially in times of scarcity. There is therefore the need to explore different mechanism for **increasing women's** access to decision making in order to influence the level and quality of their participation. The Agency will prioritize efforts aimed at removing artificial impediments and ensure a level playing field for all especially the vulnerable members for the society.

Gender inequalities are evident in terms of knowledge and experiences in such areas as water services, water policy and water availability. Water resources management has traditionally been male dominated even though the way water resources are managed affects men and women differently. NWRMA will therefore deliberately promote **policies to address women's specific** needs and to equip and empower them to participate at all levels of water resources spectrum.

If the way women are included in decision making and implementation is defined by them, water resources management becomes very relevant to their needs and enhance the chances a positive impact on their lives.

## 5.5 Coordination

Coordination is key to water resources management and development as the principle of IWRM embraces the concepts of integration, coordination, stakeholder participation, and the ideas of decentralization. NWRMA hope to ensure effective and efficient coordination and collaboration amongst stakeholders by making sure the

interact and participate in the design and implementation of programs and policies. NWRMA will also improve communication amongst stakeholders regarding regular scheduled activities and threats to water catchment. In the view to decentralized it activities, NWRMA will also create a multi-layer coordination system at all scales from basins to catchment and sub-catchment and will work with partners to define common priorities, share goals, agree on tactics and undertake joint monitoring.

## Chapter 6 - Cost Implications

A total amount of Forty-eight million two hundred and fifty-four thousand seven hundred and eighty United States dollars (\$48,254,780.00) will be required to implement the strategy. The estimated cost per outcomes per annum is summarised below:

Table 9: Budget estimates by goal and annual allocations 2019 – 2023.

	Goal Description	Annual budget (\$USD)					Total budget (\$ USD)
		2019	2020	2021	2022	2023	
1	Regulatory and institutional framework for managing and protecting water resources, reflecting the principles of IWRM, developed	778,000	3,370,000	4,205,000	3,325,000	2,101,780	13,779,780
2	Effective water resources assessment and monitoring system in place and operational.	1,850,000	3,500,000	3,370,000	3,750,000	3,220,000	15,690,000
3	Watersheds and catchments protected against deforestation and other environmental problems.	1,433,000	2,312,000	4,200,000	3,800,000	1,265,000	13,010,000
4	Effective framework for WRM capacity development and knowledge management.	350,000	670,000	825,000	322,000	473,000	2,640,000
5	An effective framework for water- related disaster management and climate change mitigation and adaptation in place and implemented.	361,000	356,000	471,000	406,000	366,000	1,960,000
6	Effective framework for management of shared waters - Trans-boundary water resources in place.	160,000	226,000	366,000	272,000	151,000	1,175,000
	<b>Total Budget</b>	<b>4,932,000</b>	<b>10,434,000</b>	<b>13,837,000</b>	<b>11,875,000</b>	<b>7,580,780</b>	<b>48,254,780</b>

## 6.1 Assumptions, Risks and Risk Management

### 6.1.1 Key Assumptions

In the preparation of this strategic plan, some assumptions were taken into account, and these include:

1. The current political will is sustained over a long period of time.
2. Budgetary allocation for WRM is increased significantly, and extra-budgetary sources are identified over the strategic plan period.
3. Stakeholders have interest in IWRM issues and are willing and able to embrace change, i.e. good practices.
4. Stakeholders are willing to collaborate and work together in a sector-wide framework.
5. There are adequate incentives to encourage coordinated WRM planning and utilization.

### 6.2.2 Potential Risks

Some of the potential risks identified for the effective implementation of the NWRMA Strategy are:

1. Failure to secure adequate financing.
2. Difficulties in getting the commitment from stakeholders in IWRM implementation.
3. Delays in financial commitments from Government and development partners.
4. Delay in essential capacity building programs may hinder the implementation process.

### 6.2.3 Risk management

Some risk mitigation measures have been identified to address the potential risk:

5. NWRMA will ensure that adequate funding is secured from government and also organise donor round table forum to solicit additional funding and follow up on resource commitment.
6. NWRMA will establish basic capacity development program on time and ensure adequate and competent staff are in place to operationalise the strategy by 2019.

## Annex

### Annex 1: Logical framework for the NWRMASDP

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
1. regulatory and institutional framework for managing and protecting water resources that reflecting the principles of IWRM developed	1.1 An operational framework for National Water Resources Management Agency, Developed	1.1.1: Procure consultancy services for development of NWRMA Operational framework	i. Operational framework developed;	I. Operational framework manual available II. Design of office structures completed, procurement processes reports available, completed office buildings physically available for inspection III. Tender notices and expression of interest documents available, invoices and signed delivery notes by appropriate authority produced.	I. Competent and adequate staff available; II. Availability of adequate funds	NWRMA, MWR, HRMO, PSRU, NPPA, development partners
		1.1.2: Develop NWRMA staff recruitment workplan	ii. state-of-the-art national office and four regional offices constructed			
		1.1.3: Prepare job descriptions for senior and middle level staff positions / managers	iii. 16 vehicles and 15 motorbikes, 4 motorized boats for river monitoring procured			
		1.1.4: Develop a comprehensive Capacity Building Strategy (CBS) to support the roll-out of the NWRMA Act-2017				
		1.1.5: Construct one national and 4 Regional NWRMA offices				
		1.1.6: Procure 16 Vehicles, 15 Motorbikes, 4 motorized boats				

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
	1.2: Parliamentary approval for regulatory framework (legal instruments) on WRM, secured	1.2.1: Procure Technical Assistance for development of regulatory framework 1.2.2: Conduct national and sub-national level consultations to secure <b>stakeholders'</b> input into development of water rights 1.2.3: Map raw water users and drilling companies nationwide 1.2.4: Prepare and operationalize a framework for a national drilling log database 1.2.5: Secure parliamentary approval for legislative instrument on water rights <b>permit and driller's</b> license regulations	i. Approved water use regulations for issuance of water right permits ii. <b>Approved driller's</b> license and groundwater development regulations	I. Concurrences from various MDAs available, II. Water use regulation manual produced III. Attendances from consultative stakeholders available IV. Conduct <b>stakeholders'</b> consultations V. Parliamentary legislative approved instrument on water rights <b>permit and driller's</b> license regulations available	I. Willingness of various MDAs to provide concurrences II. Strong lobbying in the legislator to have the bill enacted.	MWR, EPA, NPPA, MAF, SALWACO, GUMA, MoJ, Parliament, MET NWRMA, MOF, EWRC, Local Councils, MMR
	1.3: Water Resources Management Policy and Development Master Plan	1.3.1: Procure Technical Assistance for development of a gender sensitive NWR Management Policy	I. Gender sensitive National Water	I. Tender notice for the recruitment of Technical Assistance available	I. Funds availability for the recruitment of	MWR, MLGRD, MSWGCA UNICEF, FWC, FCC, all water sector players, <b>CSO's</b>

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
	(NWRMP & DMP), mainstreaming gender concerns, developed.	and development of Master Plan	Resources Management Policy and Development Master plan	II. Minutes and attendances of stakeholders meetings available III. Gender mainstreaming strategy document available	Technical Assistant	
		1.3.2: Organise <b>Stakeholders'</b> workshops on preparation of a gender sensitive NWRM policy and master plan implementation				
		1.3.3: Organise roundtable meetings to mobilise resources for implementation of the NWR master plan				
	1.4: Effective WRM sector coordination and Monitoring & Evaluation framework develop and operationalized	1.4.1: Develop NWRM sector Coordination Framework	I. WRM sector Coordination Framework	I. Workshop reports, II. Attendance register,	I. Adequate and timely provision of funds for the establishment of Technical Working Group.	MWR, EPA, NPPA, MAF, SALWACO, GUMA, MET NWRMA, EWRC, MLCPE, Standards Bureau, MLGRD
		1.4.2: Establish & operationalise inter-ministerial technical working group on IWRM	II. % of decisions of the inter-ministerial committee on IWRM, implemented	III. Minutes of Technical Working Groups IV. Monitoring and monthly reports		
		1.4.3: Organise TWG partnership coordination workshops/ meetings every last Wednesday of each month	III. NWR Management, M&E framework			
		1.4.4: Develop and Operationalize NWRM sector M & E Framework	IV. Periodic / Routine NWRM sector Progress and			

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
		1.5.2: Implement the gender mainstreaming strategy	Evaluation Reports			

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
	1.5: An effective WRM communication and ICT strategy in place and implemented	1.6.1: Develop a NWRM public education and awareness creation plan	I. A NWRM sector communication strategy and plan II. NWRM newsletter and website III. % of Watershed /Water catchment communities with WRM plans, implementing them IV. National water resources status reports reflecting catchment and sub-catchment issues V. No. of WRM-related radio & TV programmes aired annually VI. TWG reports VII. Level of ICT applications	I. Education, awareness raising and sensitisation plans available II. Minutes and attendances of committee meetings III. Samples of newsletter produced IV. Biennial national water resources status report available V. Copies of radio and TV slots produced and aired	I. Availability of Technical Expertise to produce education, awareness raising and sensitisation plans II. Adequate funds made available for the production of same III. Accessibility of radio and TV in some parts of the country.	MIC, NWRMA, civil society, ONS, Media
		1.6.2: Mobilize watershed				

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
		<p>communities to generate and implement own WRM plans.</p> <p>1.6.3: Prepare and publish biennial (2-yearly) national water resources status reports and News letters</p> <p>1.6.4: Use ICTs to promote WRM activities (e.g. phone SMS in mobilization including weather and climate alerts.</p>	<p>in WRM activities</p>			
	1.6: Effective and adequate financing mechanisms / arrangements for sustainable WRM developed	<p>1.6.1: Develop a NWRM financing strategy and resources mobilization plan.</p> <p>1.6.2: Organize a donor roundtable for resources mobilization</p> <p>1.6.3: Establish a NWRM fund and develop innovative mechanisms for generating and managing non-budget water revenue</p>	<p>I. WRM financing Strategy and Resource mobilisation plan</p> <p>II. % of annual national budget allocated to WRM activities</p> <p>III. % of annual budget generated from WRM activities</p>	<p>I. Water resources management investment plan available</p> <p>II. Evidence of adequate Budgetary allocation into the national budget factored</p>	<p>I. Strong lobbying power to Budget Bureau members</p> <p>II. Funds availability for the implementation of the plan</p>	NWRMA, MWR, MoF, development Partners, Budget Advocacy Network

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
			IV. % of annual budget generated from WRM activities V. Legal framework for water funds, including water use-related fees, fines and royalties			
	1.7: Communities and civil society organizations effectively participate in WRM activities	1.7.1: Map and identify capacity gaps among target / potential CSOs engaged in WRM	I. Proportion of CSOs actively engaged in WRM activities	I. Community and CSOs Annual Reports. II. Assessment and progress reports III. Monitoring reports IV. Community perception survey reports	I. Willingness of CSOs community people to actively participate WRM activities	CSOs, NWRMA, councils, catchment committees
1.7.2: Development appropriate Training Modules and train CSOs in WRM activities		II. Proportion of Catchment / Watershed Management Committees by district				
1.7.3 Document and Promote WRM best practice through Networking, workshops, award schemes and		III. Proportion of Water User Associations IV. Community and CSOs Annual Reports				

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
		<p>experiential learning visits (local and international)</p> <p>1.7.4 Facilitate development of local bye-laws including monitoring and compliance protocols for effective Community-based WRM.</p>				
2. Effective water resources assessment and monitoring system in place and operational	2.1: Functional hydrological network and water resources information system	<p>2.1.1: Inventorize existing hydrological infrastructure and assess their appropriateness and functionality (reflect manpower and equipment)</p> <p>2.1.2: Review and update existing water resources data and information system for consistency with WRIS needs</p>	<p>I. Reliable and verifiable quarterly hydrological data / reports</p> <p>II. % of hydrological stations manned by suitably qualified staff (indicate number / station and</p>	<p>I. Daily, weekly, monthly or yearly hydrological data available</p> <p>II. Staff profile and qualification records available;</p> <p>III. Assessment reports available</p> <p>IV. Validated and Finalised hydrological year books available</p>		NWRMA, MWR, MET

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
		2.1.3: Prepare a national water resources profile complete, with (quality and quantity) 2.1.4 Develop capacity of local and national institutions in water resources data collection, reporting and monitoring	III. level of qualification) % of hydrological stations fully equipped (specify relevant equipment) and routinely updating Water Resources Information Systems (WRIS) IV. Hydrological year book published			
	2.2: National Raw Water Quality Standards established and Surveillance and Monitoring, processes, Institutionalized	2.2.1: Construct and equip 2 Regional laboratories	I. Approved / gazetted raw water quality standards	I. Water quality assessment reports produced	I. Adequate and available funds	MWR, EPA, SALWACO, GUMA, MLCPE, Standards Bureau, EWRC, NMA, MAF, Local Council
2.2.2: Construct and equip 1 National Reference WQ laboratory		II. No. of well equipped, Testing and analytical laboratories	II. Design of water quality laboratory produced, quantity survey and tender documents produced/available			
2.2.3: Support for routine Surveillance and WQ monitoring		III. No. of nationally accredited / Reference				
2.2.4: Develop, gazette and popularize national						

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
		raw water quality standards among WRM stakeholders	IV. water quality laboratories No. of water pollution sources in different watersheds V. No. of major polluters paying penalties and complying with restorative orders in a timely manner.			
3. Watersheds and catchments protected against deforestation and other environmental problems	3.1: Watersheds, catchments and sub-catchments, mapped and catchment areas in critical danger, identified	3.1.1: Conduct nation-wide Mapping of watersheds and catchments including comprehensive analysis of their ecosystems for purposes of water resources protection/conservation	I. Proportion of watersheds with known boundaries and physical status. II. Proportion of catchment areas in critical danger, rehabilitated, restored / regenerated.	I. Reports of total acreage restored, rehabilitated, conserved and protected II. Records and minutes of attendances technical working group of various MDAs III. Strategic document available IV. Basin boards establishment	I. Political will to effect enforcement of defaulters II. Availability of adequate and timely funding to undertake restoration, rehabilitation and conservation of catchment and other water systems	<ul style="list-style-type: none"> <li>▪ NWRMA, MWR, EPA, NPPA, MAF, SALWACO, GUMA, MLCPE, MLGRD, FCC, WARD C, <b>CSO's, MAF,</b> MOJ, Law enforcement agencies</li> </ul>
		3.1.2: Organise workshops to share results of watershed mapping and agree on watersheds and				

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
		catchments in critical danger for rehabilitation/ restoration and establishment of Green-Belt		reports or documents available	III. Funds availability for the recruitment of adequate and competent manpower to patrol across the country	
	3.2 Thirty-percent (30%) catchment areas in critical danger, protected / restored / regenerated.	3.2.1: Mobilise and sensitise local communities, leaders and stakeholders on catchment and sub-basin management approaches, roles and responsibilities	I. Restoration / regeneration protocol for watersheds / water catchment areas in critical danger around the western peninsular and the provinces  III. Protocol involving forest patrol guards for the enforcement re-establishment of the Green-Belt around western peninsular and across the country		IV. Willingness of local communities to fully participate and adhered to the proposed green belt established	

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
	3.3: Clearly defined roles and responsibilities guiding Basin boards, water catchment and sub-catchment management committees in the efficient management of water resources.	3.3.1: Support basin boards to develop regulations and bylaws for IWRM	I. No. of River basin boards			
4. Effective framework for WRM capacity development and knowledge management	4.1: NWRMA comprehensive Capacity Building Strategy (CBS) informing short to medium-term institutional strengthening and Staff recruitment, knowledge and skills development	3.3.2: Facilitate establishment of basin boards, Catchment & Sub-catchment Committees / Structures	I. NWRMA CBS guiding institutional strengthening and capacity building processes II. Extent to which Agency performance targets are reached	I. Training needs assessment report II. Developed training manuals III. Training attendances and reports IV. Performance appraisal records and reports	I. Staff provide accurate information with respect to their various capacities II. Adequate Funds are made available for capacitating the gaps identified	NWRMA, MWR, MoF, HRMO, GWRC, NJALA, University of Sierra Leone, BWMA
		3.3.3: Engage and incorporate BWMA into NWRMA	III. Proportion of <b>Agency's</b> budget allocated to capacity building			
		4.1.1: Procure specialist services for development of NWRMA CB Strategy				
	4.2: Action Research &	4.1.2: Support for institution	I. No. of Targeted			

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
	Development guiding evidence-based WRM programing	strengthening and staff development in accordance with proposed NWRMA CBS	Action Research / Studies informing WRM programming			
5. An effective framework for water- related disaster management and climate change mitigation and adaptation in place and implemented	5.1: Climate change Risks and vulnerabilities mainstreamed into WRM policy and planning processes.	5.1.1: Support for Documentation and sharing of Best Practice, In-country and across country experiential learning visits	I. % of vulnerable / high risk communities aware of climate change effects	I. Climate change risks, adaptation strategy and catchment based national sensitisation programme report available	I. Willingness of the general populate to accept that climate change is real II. Availability of timely and adequate funds for the establishment of above	MWR, EPA, NPPA, MAF, SALWACO, GUMA, Parliament, MET NWRMA, ONS, MLCPE, MSWGCA, Standards Bureau, MLGRD, MIC
		5.1.2: Support for Action Research and Development studies	II. Annual WRM plans incorporating climate change adaptation / mitigation activities.	II. Early warning system for mitigating climate change and its related effects strategy available		
		5.1.3: Prepare a WRM related climate change risk / vulnerability profile for Sierra Leone				
	5.2 Water Resources related Climate Change disaster mitigation preparedness plan	5.2.1: Raise climate change risk / vulnerability awareness targeting most vulnerable communities.	I. Preparedness plan for mitigating WRM disaster related to Climate	I. National disaster preparedness plan document available II. Fully developed and validated	I. National preparedness disasters agencies fully cooperate and comply in the	

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
	guiding response efforts	5.2.2: Develop and implement a national water security plan 5.2.1: Develop and roll-out a preparedness response plan for WRM disaster related to Climate Change. 5.2.2: Strengthen capacity of national and local councils, including civil society, for disaster prediction and response, with emphasis on water resources disasters	change effects II. No. of water points that are perennial sources of water supply III. No. of water resources with functional early warning system	document on Early warning system for disaster prediction and response, with emphasis on water disasters available	II. preparation of national disaster plan Full Political commitment in mitigating disaster issues	
6. Effective framework for management of shared waters - Trans-boundary water resource in	6.1: Trans-boundary water cooperation framework in place and integrated into <b>the country's</b> international relations and regional integration strategies	6.1.1: Support for Study visits for staff of NWRMA and political leaders to other countries to study best practices on trans-boundary WRM.	I. Incidences of trans-boundary water- related conflicts II. Level of benefits (perceived and real) arising from trans-boundary cooperation programmes developed III. Multi-sectoral technical expert committee for TWRM established IV. TDA and SAP developed	I. Reports of transboundary conflicts reported and settled available II. Monthly, quarterly, annual and monitoring reports available III. Minutes and attendances of technical committee	I. Parties agree to concessions reached at during conflict discussions and settlements	NWRMA, MWR, MRU, MFAIC, MIA, NPAA, MOE, MOPED, MIC

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
		6.1.2: Share water resources data (quality and quantity)	V. National water cooperation framework developed	IV. meetings held available Validated Framework of national water cooperation document available		
		6.1.3: Develop a detailed stakeholder analysis of the water sector in the targeted transboundary basins & determine training needs of local stakeholders involved in the Trans-boundary Diagnostic Analysis (TDA) and Stakeholder Action Plan (SAP) process and develop a training programme.				
		6.1.4: Implement training sessions concerning the methodological approach and the planning process for preparing a TDA and SAP in a transboundary basin.				
		6.1.5: Organize training and sensitization workshops for Ministry of Foreign				

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
		Affairs and International Cooperation staff on regional trans-boundary cooperation.				
		6.1.6: Organise training workshops for water governance champions on themes including leadership skills, action planning, policy influencing and gender mainstreaming in the targeted Moa/Makona, and Great Scarcies/Kolanté river basins				
		6.1.7: Develop a national guide on shared waters for Sierra Leone diplomatic missions /Ministry of Foreign Affairs and Ministry of Internal Affairs.				
		6.1.8: Ensure that international instruments on management and administration of				

Goals	Outputs	Activities	Key Indicators/Targets	Means of Verification	Risks / Assumptions	Stakeholders
		trans-boundary waters are translated into a national policy and legislation.				
	6.2 International financial obligations met, adopt treaties and conventions, participate and implement in international programs and plans (e. g. MRU, WRCC-ECOWAS, world water week, WMO, COP, GWP/WA and AMCOW etc)	6.2.1: Participate in regional WRM meetings and activities with the aim of sharing water quality and quantity data.	I. No. of international and regional conferences and workshops participated in  II. No. of treaties or international conventions adopted	I. Back to office reports on regional and international WRM meetings and activities available  II. Copies of adopted international water convention available	I. Availability of adequate funds to attend regional and international WRM meetings and activities  II. Political commitment in adoption international conventions	
		6.2.2 Adopt international water convention				

Annex 2: Time frame for the implementation of the NWRMA strategic plan.

Goals	Outputs	Activities	2019	2020	2021	2022	2023
1. Regulatory and institutional framework for managing and protecting water resources, reflecting the principles of IWRM, developed	1.1: Operational framework for the National Water Resources Management Agency, Developed	1.1.1: Procure international consultancy services for development of NWRMA Operational framework	■				
		1.1.2: Develop NWRMA staff recruitment workplan	■				
		1.1.3: Prepare job descriptions for senior and middle level staff positions / managers	■				
		1.1.4: Develop a comprehensive Capacity Building Strategy (CBS) to support the roll-out of the NWRMA Act-2017	■				
		1.1.5: Construct one national and 4 Regional NWRMA offices	■	■	■	■	■
		1.1.6: Procure 16 Vehicles, 15 Motorbikes, 4 motorized boats		■	■	■	■
	1.2: Parliamentary approval for regulatory framework (legal instruments) on WRM, secured	1.2.1: Procure Technical Assistance for development of regulatory framework	■				
		1.2.2: Conduct national and sub-national level <b>consultations to secure stakeholders' input into development of water rights</b>	■				
		1.2.3: Map raw water users and drilling companies nationwide	■				
		1.2.4: Prepare and operationalize a framework for a national drilling log database		■			
		1.2.5: Secure parliamentary approval for legislative <b>instrument on water rights permit and driller's license regulations</b>			■	■	■

	1.3: Water Resources Management Policy and Development Master Plan (NWRMP & DMP), mainstreaming gender concerns, developed	1.3.1: Procure Technical Assistance for development of a gender sensitive NWR Management Policy and development of Master Plan					
		1.3.2: Organise <b>Stakeholders' workshops on preparation</b> of a gender sensitive NWRM policy and master plan implementation					
		1.3.3: Organise roundtable meetings to mobilise resources for implementation of the NWRMA master plan					
	1.4: Effective WRM sector coordination and Monitoring & Evaluation framework develop and operationalized	1.4.1: Develop NWRM sector Coordination Framework					
		1.4.2: Establish & operationalise inter-ministerial technical working group on IWRM					
		1.4.3: Organise TWG partnership coordination workshops/ meetings every last Wednesday of each month					
		1.4.4: Develop and Operationalize NWRM sector M & E Framework					
	1.5: An effective WRM communication and ICT strategy in place and implemented	1.5.1: Develop a NWRM public education and awareness creation plan					
		1.5.2: Mobilize watershed communities to generate and implement own WRM plans.					
		1.6.3: Prepare and publish biennial (2-yearly) national water resources status reports and News letters 1.6.4: Use ICTs to promote WRM activities (e.g. phone SMS in mobilization including weather and climate alerts.					
	1.6: Effective and adequate financing mechanisms /	1.6.1: Develop a NWRMA financing strategy and resources mobilization plan.					

	<p>arrangements for sustainable WRM, including R&amp;D, developed</p>	<p>1.6.2: Organize a donor roundtable for resources mobilization</p>	<p>■</p>				
		<p>1.6.3: Establish a NWRM fund and develop innovative mechanisms for generating and managing non-budget water revenue.</p>	<p>■</p>		<p>■</p>		<p>■</p>
	<p>1.7: Communities and civil society organizations effectively participate in WRM activities</p>	<p>1.7.1: Map and identify capacity gaps among target / potential CSOs engaged in WRM.</p>		<p>■</p>			
		<p>1.7.2: Development appropriate Training Modules and train CSOs in WRM activities 1.7.3: Document and Promote WRM best practice through Networking, workshops, award schemes and experiential learning visits (local and international)</p>		<p>■</p>			
		<p>1.7.4: Facilitate development of local bye-laws including monitoring and compliance protocols for effective Community-based WRM.</p>					
<p>2. Effective water resources assessment and monitoring system in place and operational</p>	<p>2.1: Functional hydrological network and water resources information system</p>	<p>2.1.1: Inventorize existing hydrological infrastructure and assess their appropriateness and functionality (reflect manpower and equipment)</p>	<p>■</p>				
		<p>2.1.2: Review and update existing water resources data and information system for consistency with WRIS needs</p>	<p>■</p>				
		<p>2.1.3: Prepare a national water resources profile complete, with (quality and quantity)</p>	<p>■</p>	<p>■</p>	<p>■</p>	<p>■</p>	<p>■</p>

	<p>2.2: National Raw Water Quality Standards established and Surveillance and Monitoring, processes, Institutionalized</p>	<p>2.2.4: Develop capacity of local and national institutions in water resources data collection, reporting and monitoring</p>	<p>■</p>				
		<p>2.2.1: Construct and equip 2 Regional laboratories and 1 national reference water quality laboratory</p>				<p>■</p>	<p>■</p>
		<p>2.2.2: Support for routine Surveillance and WQ monitoring</p>				<p>■</p>	<p>■</p>
		<p>2.2.3: Develop, gazette and popularize national water quality standards among WRM stakeholders</p>	<p>■</p>	<p>■</p>	<p>■</p>	<p>■</p>	<p>■</p>
<p>3. Watersheds and catchments protected against deforestation and other environmental problems</p>	<p>3.1: Watersheds, catchments and sub-catchments, mapped and catchment areas in critical danger, identified</p>	<p>3.1.1: Conduct nation-wide Mapping of watersheds and catchments including comprehensive analysis of their ecosystems for purposes of water resources protection/ conservation</p>	<p>■</p>	<p>■</p>	<p>■</p>	<p>■</p>	
	<p>3.2 Thirty-percent (30%) catchment areas in critical danger, protected / restored / regenerated.</p>	<p>3.1.2: Organise workshops to share results of watershed mapping and agree on watersheds and catchments in critical danger for rehabilitation/ restoration and establishment of Green-Belt</p>		<p>■</p>	<p>■</p>	<p>■</p>	<p>■</p>
		<p>3.2.1: Mobilise and sensitise local communities, leaders and stakeholders on catchment and sub-basin management approaches, roles and responsibilities</p>		<p>■</p>	<p>■</p>	<p>■</p>	<p>■</p>
	<p>3.3: Clearly defined roles and responsibilities guiding Basin boards, water catchment and sub-catchment management committees in the efficient</p>	<p>3.3.1: Support basin boards to develop regulations and bylaws for IWRM</p>	<p>■</p>	<p>■</p>			
		<p>3.3.2: Facilitate establishment of basin boards, Catchment &amp; Sub-catchment Committees / Structures</p>	<p>■</p>	<p>■</p>	<p>■</p>	<p>■</p>	<p>■</p>
		<p>3.1.3: Engage and incorporate BWMA into NWRMA</p>		<p>■</p>	<p>■</p>	<p>■</p>	<p>■</p>

	management of water resources.							
4. Effective framework for WRM capacity development and knowledge management	4.1: NWRMA comprehensive Capacity Building Strategy (CBS) informing short to medium-term institutional strengthening and Staff recruitment, knowledge and skills development	4.1.1: Procure specialist services for development of NWRMA CB Strategy						
		4.1.2: Support for institution strengthening and staff development in accordance with proposed NWRMA CBS						
		4.1.3: Support for Documentation and sharing of Best Practice, In-country and across country experiential learning visits						
	4.2: Action Research & Development guiding evidence-based WRM programming	4.2.1 Support for Action Research and Development studies						
5. An effective framework for water-related disaster management and climate change mitigation and adaptation in place and implemented	5.1: Climate change Risks and vulnerabilities mainstreamed into WRM policy and planning processes.	5.1.1: Prepare a WRM related climate change risk / vulnerability profile for Sierra Leone						
		5.1.2: Raise climate change risk / vulnerability awareness targeting most vulnerable communities.						
		5.1.3 Develop and implement a national water security plan						
	5.2: Water Resources related Climate Change disaster mitigation preparedness plan guiding response efforts.	5.2.1: Develop and roll-out a preparedness response plan for WRM disaster related to Climate Change						
		5.2.2: Strengthen capacity of national and local councils, including civil society, for disaster prediction and response, with emphasis on water resources disasters						

6. Effective framework for management of shared waters - Trans-boundary water resources	6.1: Trans-boundary water cooperation framework in place and integrated into <b>the country's international</b> relations and regional integration strategies	6.1.1: support for study visits for staff of NWRMA and political leaders to other countries to study best practices on trans-boundary WRM.					
		6.1.2: Share water resources data (quality and quantity)					
		6.1.3: Develop a detailed stakeholder analysis of the water sector in the targeted transboundary basins & determine training needs of local stakeholders involved in the Trans-boundary Diagnostic Analysis (TDA) and Stakeholder Action Plan (SAP) process and develop a training programme.					
		6.1.4: Implement training sessions concerning the methodological approach and the planning process for preparing a TDA and SAP in a transboundary basin.					
		6.1.5: Organise national training workshops for water governance champions on themes including leadership skills, action planning, policy influencing and gender mainstreaming in each targeted basin (Moa/Makona, and Great Scarcies/Kolanté).					
		6.1.6 Organise training and sensitisation workshops for Ministry of Foreign Affairs and International Cooperation staff on regional Trans-boundary cooperation					
		6.1.7: Develop a national guide on shared waters for Sierra Leone diplomatic missions /Ministry of Foreign Affairs and Ministry of Internal Affairs					

6.2 International financial obligations met, adopt treaties and conventions, participate and implement in international programs and plans (e. g. MRU, WRCC-ECOWAS, world water week, WMO, COP, GWP/WA and AMCOW etc)	6.2.1: Participate in regional WRM meetings and activities with the aim of sharing water quality and quantity data.					
	6.2.2: Adopt international water convention					

Annex 3: Budget by output/ major activity and outcome.

Goal(s)	Key Output(s)	Output Total (USD)
1. Regulatory and institutional framework for managing and protecting water resources, reflecting the principles of IWRM, developed	1.1: Operational framework for the National Water Resources Management Agency, developed	11,327,780
	1.2: Parliamentary approval for regulatory framework (legal instruments) on WRM, secured	350,000
	1.3: Water Resources Management Policy and Development Master Plan (NWRMP & DMP), mainstreaming gender concerns, developed.	727,000
	1.4: Effective WRM sector coordination and Monitoring & Evaluation framework develop and operationalized	650,000
	1.5: An effective NWRM communication and ICT strategy in place and implemented	385,000
	1.6: Effective and adequate financing mechanisms / arrangements for sustainable WRM developed	120,000
	1.7: Community and civil society effectively participate in WRM activities	220,000
	Total outcome 1	13,779,780
2. Effective water resources assessment and monitoring system in place and operational	2.1: Functional hydrological network and water resources information system in place	5,250,000
	2.2: National Raw Water Quality Standards established and Surveillance and Monitoring, processes, Institutionalized	10,440,000
	Total outcome 2	15,690,000

3. Watersheds and catchments protected against deforestation and other environmental problems	3.1 Watersheds, catchments and sub-catchments, mapped and catchment areas in critical danger, identified	815,000
	3.2 Thirty-percent (30%) catchment areas in critical danger, protected / restored / regenerated.	10,725,000
	3.3 Clearly defined roles and responsibilities guiding Basin boards, water catchment and sub-catchment management committees in the efficient management of water resources	1,470,000
	Total outcome 3	13,010,000
4. Effective framework for WRM capacity development and knowledge management	4.1 NWRMA comprehensive Capacity Building Strategy (CBS) informing short to medium-term institutional strengthening and Staff recruitment, knowledge and skills development	1,605,000
	4.2 Action Research & Development guiding evidence-based WRM programming	1,035,000
	Total outcome 4	2,640,000
5. An effective framework for water- related disaster management and Climate change mitigation and adaptation in place and implemented	5.1: Climate change risks and vulnerabilities mainstreamed into WRM policy and planning processes.	1,500,000

	5.2: Water Resources related Climate Change disaster mitigation preparedness plan guiding response efforts.	460,000
	Total outcome 5	1,960,000
6. Effective framework for management of shared waters - Trans-boundary water resources	6.1 Trans-boundary water cooperation framework in <b>place and integrated into the Country's international relations and regional integration strategies</b>	835,000
	6.2 International financial obligations met, adopt treaties and conventions, participate and implement in international programs and plans (e. g. MRU, WRCC-ECOWAS, World water week, WMO, COP, GWP/WA and AMCOW etc)	340,000
	Total outcome 6	1,175,000
<b>Total</b>	<b>Total budget for the strategic plan</b>	<b>48,254,780</b>

#### Annex 4: Various financing options for NWRMA.

It has always been the government that is heavily relied upon for financing the water sector. However, over the years, as a result of decline in government resources the sector suffered funding gaps. Raw water has not been deemed as an economic good and therefore consumers and/or users only consider paying for treated water. This attitude has over the years impeded the sector to carry out its conservation, monitoring, protection and exploration of water resources activities. The NWRMA will therefore pursue the following strategies to abate this trend:

*Water pricing:* This is one of the important tools that is geared towards managing the demand for water resources as a market-based strategy. Its importance emanates from the fact that in all its uses, water resources have economic value. Therefore, in order to maximize efficient water use across all sectors, the adoption of a water pricing policy is paramount, which employs the user pays principle in that the full economic cost is borne for water resources.

The idea behind this strategy is to conserve water, as industries, agricultural and mining companies will have price elasticity higher than domestic consumption of water resources as an incentive. We are of the view that acceptance is required for the pricing system and therefore the NWRMA will harness the full consultation of all water resources users.

*Levies and fees:* **This is achieved as a result of employing the “user pays” principle** in order to meet the statutory and regulatory activities of the NWRMA.

*Effluent charges:* Industries that use water resources should pay effluent charges **based on the “polluter pays” principle. Industrial effluent or pollution charges are a** measure that will encourage the efficient use of water resources in industries with a view to protecting the environment from degradation. As a financing strategy **therefore for the NWRMA, it is a necessity to fully apply the “polluter pays” principle** and this should involve a discharge monitoring and management charge permits, and a flouting penalty charge.

*Government funding:* This includes quasi government and donor money on a broader definition which has played a major role in financing water resources activities and will therefore continue to do so.

*Money market funding:* The NWRMA may explore this source of financing. This is actually not a usual means of funding for the water sector therefore its use has not been brought to the fore. Under this scheme, the NWRMA may raise funds through commercial loans and bonds. Government should therefore create the platform for the NWRMA to explore same. The caveats however, is that the NWRMA may only apply for such money market funding for activities that will at the end make more money to offset the loans and/or repay same accordingly.

*External financing:* External financing for the NWRMA shall take the form of grants, gifts, endowments, bequests, public-private partnerships for investment or other contributions given by persons or organizations for the activities of the NWRMA. Although the Act makes provision as to how these funds should be used it is more apt that a clear guideline is put in place for the management of these funds. The NWRMA will therefore create attraction for such funding provided always that the values of the NWRMA are not compromised in accepting such financing.

## Annex 5: Approaches for Preventing, Responding and Recovering from Water-Related Disasters

There is a need to strengthen WRM related disaster management competence in relation to information, facilities, financing and manpower. The employment of inimical practices in land use, deforestation and degradation of catchments all contribute to droughts and floods.

*5.2.1 Floods:* The capital city of the country is prone to floods and other areas experience flash floods. These have over the years over-stretched the national budget which could have been used for other development purposes. Strategies on prevention and mitigation are:

- (a) Flood control infrastructure development.
- (b) Develop policies for areas prone to floods for settlement.
- (c) In order to deter surface run-off, we shall improve on catchment conservation and protection.
- (d) Infrastructure design parameters and regulations will be developed in order to ascertain that the structures can uphold and/or sustain flooding at the design stage.

Strategies on preparedness are:

- (a) Raise awareness about the need to be insured in order to indemnify losses in terms of flooding and on the dangers of residing in flood prone areas.
- (b) Appropriate response training and capacity building.
- (c) Develop at national, regional and district levels a flood forecasting and early warning systems.
- (d) In particular extreme happenings, in order to enable design for protection against flooding, we will enhance data recording and information management systems.

Strategies on response are:

- (a) Financing mechanisms will be developed.
- (b) At national, regional, and district levels, we will establish an institutional framework for managing floods.

Strategy on recovery and rehabilitation will be:

- (a) To work with or establish water related disaster management institutional framework.
- All the above-mentioned strategies will be achieved with the collaboration of the relevant institutions like ONS, MET NWRMA, EPA, NPAA, Ministry of Lands and Housing etc.

*4.18.2 Drought:* The country is not yet seemingly faced with this water related disaster. However, it is vital to know that in cases of drought the debilitating effects may include erosion of assets, decreasing readiness to put up with droughts in the future, rural community impoverishment and serious repercussion on government **budget. It is therefore NWRMA's responsibility to identify the strategies below and same implemented in collaboration with other relevant institutions.**

Strategies on prevention and mitigation are:

- (a) In order to improve on ground water storage and soil infiltration we will undertake catchment management activities.
- (b) Develop public awareness messages on water conservation techniques.
- (c) In order to ensure food security and increase the per capita storage of water in critical environs, we will develop lasting strategies for planning and construction of infrastructure.
- (d) Create a system for advisory services for drought eminent environs with a view to increasing resistance towards the debilitating outcomes of droughts more especially concerning borehole drilling for water supplies etc.

Strategies on mitigation and preparedness are:

- (a) Ensure there is a strategic water reserve available.

- (b) Provide the users with best practice approaches in water use management and to certain extent restraints on water resources use for purposes that are not essential.
- (c) Establish a monitoring and data collection mechanism to provide indication on water table levels.
- (d) Devise financing mechanisms.

Strategies on response are:

- (e) At the national, regional and district levels we will establish drought management institutional structures.

Annex 6: NWRMA logo description.



The logo shows groundwater and surface water sources.

The brownish yellow colour represents effective management of the water resources and the green colour represents the mountains of Sierra Leone, through which both surface and ground water recharge is eminent. The ground water is represented by the borehole and the blue shade represents water (including surface water).

## References

Ghana Water Resources Commission- National Integrated Water Resources Management (IWRM) Plan (2012)

MICS 2017, Sierra Leone Multiple Indicator Cluster Survey 2017, Survey Findings Report

Ministry of Natural Resources Republic of Rwanda Water Resources Management Sub-Sector Strategic Plan (2011 – 2015)

Ministry of Natural Resources Republic of Rwanda- Five-Year Strategic Plan for The Environment and Natural Resources Sector (2009 – 2013)

Ministry of Water Resources, Works and Housing Republic of Ghana- Water Sector Strategic Development Plan (2012-2025)

Ministry of Water Resources Republic of Sierra Leone-Five Years Strategic Plan (2018-2023)

Ministry of Water Resources-Water resources monitoring in Sierra Leone Volumes 1,2 & 3

National Water Resources Management Agency Act No.5 of 2017

New Direction Agenda Manifesto 2018

Presidential Address to Parliament, 14<sup>th</sup> May, 2017

Sierra Leone National Water and Sanitation Policy (2010)

Sierra Leone 2015 Population and Housing Census- National Analytical Report