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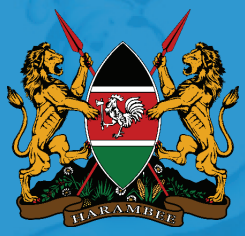

MINISTRY OF WATER, SANITATION AND IRRIGATION

THE NATIONAL WATER RESOURCES STRATEGY (2020 - 2025)

JANUARY, 2021

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Foreword

Provision of water is an essential prerequisite for inclusive economic growth, poverty reduction and sustainable socioeconomic development. Therefore, prudent management of water resources by all stakeholders is a paramount consideration particularly for furtherance of government's constitutional mandate of ensuring water availability and accessibility to all.

The Ministry is mandated under the Water Act 2016 to develop enabling policies that ensure development, management, regulation, protection and equitable allocation of water resources. The National Water Resources Strategy (2020-2025) has been developed in line with the Constitution of Kenya 2010, the Water Act 2016, and the National Water Policy.

The development of this Strategy therefore affirms Government commitment to the achievement of the right of access to clean and safe water in adequate quantities for all, as enshrined in Article 43 of the Constitution, 2010.The development of the strategy also took into account the lessons drawn from the preceding strategies (2007-2009, 2010-2016), and requirements of other policy priorities and obligations such as the Big Four Agenda, Vision 2030, National Water Master Plan 2030, SDGs and stakeholders contributions.

There are a myriad of challenges bedevilling the water resources which include: lack of universal access to safe water, water scarcity, rising water demand, catchment degradation, encroachment of riparian land and wetlands; pollution, uncontrolled and unregulated use of water resources, flooding, management of trans-boundary resources, limited technical and enforcement capacities, climate variability and climate change. This strategy is therefore designed to assist the sector to effectively respond to these challenges and other emerging issues.

In formulating this strategy, the Ministry recognizes that the management of water resources is a multi-sectorial and a shared responsibility of all Kenyans. The strategy has also taken into consideration the devolution architecture and the ongoing institutional and policy reforms in the water sector.

The implementation of this strategy shall be guided by the Constitutional principles of equity, security, equitable access, sustainability, productive management of resources and sound conservation. Cooperation and consultation in the spirit of the constitution between the national government, the county governments and the private sector is critical to the successful implementation of this strategy.

I urge all the concerned parties; county government, private sector and communities in Kenya should therefore ensure that there is successful implementation of this Strategy for the well-being of all citizens; that the water resources are used and managed in a manner that is equitable, efficient, productive and sustainable for the benefit of all.

It is therefore my hope that this strategy will help drive the country`s Vision "Water for All'. I wish to thank all those who have contributed to the development of this important document.

Sicily K. Kariuki (Mrs.), EGH
Cabinet Secretary
Ministry of Water, Sanitation and Irrigation

Preface

The Constitution of Kenya 2010 provides that access to water and sanitation is a human right. However, rising water demands from the key economic sectors energy, mining and agriculture coupled with rising urbanisation and industrialisation continue to exert enormous pressure on the scarce water resources. Further, the water sector is facing emerging challenges that relate to water resource conflicts, catchment degradation, encroachment of riparian land, wetlands and uncontrolled and unregulated use of water resources.

To redress the challenges and ensure that the water resources are properly managed for the benefit of all Kenyans, the Ministry of Water, Sanitation and Irrigation has developed the National Water Resources Management Strategy to guide the management of water resources in the country for the period 2020 to 2025. The strategy is formulated in the context of the constitutional requirement that every person has the right to safe water and that Kenya is a water scarce country. In formulating this strategy, the government also recognises that universal access to water and sanitation continues to be a big challenge particularly among the poorest and other marginalised communities. Enhancing access to water and improved sanitation is a key priority of the government for improvement of health and wellbeing of the citizens.

This strategy has taken into consideration the country's new and wellbeing structure of the government and the ongoing institutional and policy reforms in the water sector. The 2020-2025 strategy articulates a number of strategic objectives and actions that will be pursued to enhance availability and access to water resources by all. The strategic options are organised around eight (8) thematic areas. Each thematic area outlines the objectives and specific strategic actions that will guide efforts towards realisation of the Ministry`s vision. The execution of this strategy will assist the water sector to effectively respond to emerging issues and challenges.

The development of this Strategy was achieved through an elaborate and consultative process involving all key stakeholders. The stakeholders were drawn from various public and private institutions responsible for water regulation and management; including the Ministry of Water, Sanitation and Irrigation, water sector institutions, other government ministries and agencies, County governments, research and training institutions, water service providers and community associations.

The successful implementation of this strategy requires our collective effort and commitment. I therefore urge stakeholders to play their respective roles in ensuring this strategy is successfully implemented to ensure water availability and accessibility by all.

Dr. Andrew Tuimur, CBS
Chief Administrative Secretary
Ministry of Water, Sanitation and Irrigation

Acknowledgements

The management of water resources in Kenya is multi sectorial. The development of the National Water Resource Strategy (2020-2025) was therefore an outcome of collaborative efforts of various stakeholders. Through a broad participatory and consultative approach, the process of developing this strategy benefitted from the input, support and guidance of many individuals and institutions in the private sector, community associations, academia, Non State Actors, development partners, and national and county government agencies.

In particular, I wish to thank the Water Secretary, the Task Team Leader and the Staff at the Ministry of Water Sanitation and Irrigation for providing useful information and reviewing various drafts which enriched the strategy. I am also greatly indebted to the participants who attended the consultative workshops across the various water catchments in the country. Much thanks also go to the National Government agencies who participated in the consultation meetings and provided invaluable suggestions on strategic objectives and actions for the strategy. The agencies include; The Water Resources Authority (WRA), National Water Harvesting and Storage Authority (NWHSA), The National Environment Management Authority (NEMA); The Kenya Forest Service (KFS), Water Services Regulatory Board (WASREB), Kenya Water Towers Agency (KWTA); Water Works Development Agencies (WWDAs), Regional Development Authorities (RDAs), Kenya Meteorological Department (KMD), Kenya Wildlife Service (KWS), National Drought Management Authority (NDMA); Kenya Institute for Public Policy Research and Analysis, (KIPPRA), the National Irrigation Authority (NIA), The Kenya Electricity Generating Company (KenGen), Kenya Water Institute (KEWI), Regional Centre on Groundwater Resources Education, Training and Research (RCGW) and Water Sector Trust Fund (WSTF). The participation of Council of Governors (CoG) and various County Government Departments across the country is also strongly acknowledged.

Lastly, my special thanks go to the team of consultants; Prof. David Mburu, Dr. Josiah Mwangi Ateka, Dr. Robert Mbeche, Dr. Clifford Obiero and Dr. Callen Nyamwange for providing technical expertise and their efforts in the compilation of this strategy document.

Joseph W. Irungu, CBS
Principal Secretary,
Ministry of Water, Sanitation and Irrigation

List of Abbreviations and Acronyms

ACA	Athi Catchment Area
AGWR	Artificial Groundwater Recharge
ASALs	Arid and Semi-Arid Areas
BMO	Business Membership Organisations
BWRCs	Basin Water Resources Committees
CBO	Community Based Organisation
CDF	Constituency Development Fund
CBS	Chief of the Order of the Burning Spear
CG	County Government
CoG	Council of Governors
CIDP	County Integrated Development Plan
CMS	Catchment Management Strategy
CSR	Corporate Social Responsibility
DCF	Drought Contingency Fund
DRSRS	Department of Resource Surveys and Remote Sensing
EGH	Elder of the Order of the Golden Heart
EAC	East African Community
EMCA	Environment Management Coordination Act
ENNCA	Ewaso Nyiro North Catchment Area
FA	Farmers Association
IWRM	Integrated Water Resources Management
KEFRI	Kenya Forestry Research Institute
KENGEN	Kenya Electricity Generating Company
KEWI	Kenya Water Institute
KEPSA	Kenya Private Sector Alliance
KFS	Kenya Forest Service
KfW	Kreditanstalt für Wiederaufbau) Credit Institute for Reconstruction
KIPPRA	Kenya Institute of Public Policy Research and Analysis

KMD	Kenya Meteorological Department
KVDA	Kerio Valley Development Authority
KWS	Kenya Wildlife Service
KWTA	Kenya Water Tower Agency
LBDA	Lake Basin Development Authority
LVNCA	Lake Victoria North Catchment Area
LVSCA	Lake Victoria South Catchment Area
M&E	Monitoring and Evaluation
MTP	Medium Term Plan
MAR	Managed Aquifer Recharge
MWSI	Ministry of Water ,Sanitation and Irrigation
NEMA	National Environment Management Authority
NDMA	National Drought Management Authority
NDOC	National Disaster Operations Centre
NLC	National Land Commission
NIA	National Irrigation Authority
NPS	National Police Service
NSAs	Non-State Actors
NWHSA	National Water Harvesting and Storage Authority
NWMP	National Water Master Plan
NWRS	National Water Resources Strategy
PES	Payment for Ecosystem Services
PESTEL	Political, Economic, Social, Technological, Environmental and Legal Analysis
PPP	Public Private Partnership
PS	Principal Secretary
RCGW	Regional Centre on Groundwater Resources Education ,Training and Research
RCMRD	Regional Centre for Mapping of Resources for Development
RDA	Regional Development Authority
RQOs	Resource Quality Objectives
RVCA	Rift Valley Catchment Area
SDGs	Sustainable Development Goals

SWOT	Strengths Weaknesses Opportunities and Threats
TCA	Tana Catchment Area
TARDA	Tana and Athi Rivers Development Authority
USAID	United States Agency for International Development
WASREB	Water Services Regulatory Board
WHO	World Health Organisation
WRA	Water Resources Authority
WRM	Water Resources Management
WRUAs	Water Resources User Associations
WSTF	Water Sector Trust Fund
WSPs	Water Services Providers
WT	Water Tribunal
WWDA	Water Works Development Agency
WWF	World Wide Fund for Nature

Glossary of Terms

Environmental flow: refers to the water provided within a river, wetland or coastal zone to maintain ecosystems and their benefits where there are competing water uses and where flows are regulated

Equitable access to safe drinking water and sanitation: refers to access being similar for all people irrespective of where they live, whether they belong to vulnerable or marginalised groups, and to the associated costs being affordable for all users.

Improved sanitation facilities: refers to a facility that hygienically separates human excreta from human contact.

Payments for ecosystem services: refers to when a beneficiary or user of an ecosystem service makes a direct or indirect payment to the provider of that service.

Safe drinking water: refers to water with microbial, chemical and physical characteristics that meet WHO guidelines or national standards on drinking water quality

Transboundary waters: refers to aquifers, and lake and river basins shared by two or more countries – support the lives and livelihoods of vast numbers of people across the world. In an era of increasing water stress, how we manage these critical resources is vital to promoting peaceful cooperation and sustainable development.

Water security: refers to the capacity of a population to safeguard sustainable access to adequate quantities of and acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability.

Water scarcity: refers to a situation where a country's renewable freshwater supplies are less than 1,000 cubic meters per capita per annum.

Water stress: refers to a situation where a country's annual renewable freshwater supplies are between 1,000 and 1,700 cubic meters per capita per annum

Water use efficiency: refers to the ratio between effective water use and actual water withdrawal. It characterises, in a specific process, how effective is the use of water

Executive Summary

Water is crucial for domestic use, sanitation, agriculture, irrigation, aquaculture, energy, industry, urban growth and other sectors of the economy. Water is also important in maintaining the environment's integrity and sustainability. As such, the importance of this sector is recognised in the Constitution of Kenya, 2010 as well other national and international policy instruments. The Constitution recognises access to clean and safe water as a right to all and that use and management of water resources should be in manner that is equitable, efficient, productive and sustainable for the benefit of all.

In line with this mandate, the Government of Kenya through the Ministry of Water, Sanitation and Irrigation (MWSI) has implemented various water sector reforms to enhance the availability and access to water by all. The enactment of the Water Act, 2016 is one of the major reforms that has been implemented with the aim of meeting the constitutional obligations. Article 10 of the Act requires that the Ministry in charge of water affairs shall periodically formulate a National Water Resources Management Strategy (NWRS) whose objective is to provide the Government's plans and programmes for the protection, conservation, control and management of water resources. The previous National Water Resources Strategy (NWRS) covered the period 2010-2016. The formulation of a new strategy was therefore, necessary in line with the requirements of the law. The formulation of the new strategy (2020-2025) took into account the performance of the lapsed WRM strategies (2007-2009, 2010-2016), emerging issues and challenges. The key challenges include: lack of universal access to safe water, water scarcity, catchment degradation, encroachment of riparian land and wetlands, pollution of water sources , uncontrolled and unregulated use of water resources, flooding, management of transboundary resources, limited technical and enforcement capacities, rising water demand, climate variability and climate change.

The development of the Strategy followed an elaborate and consultative approach and involved stakeholders at Community, County and National levels. This was done in recognition of the Constitutional provision that management of water resources is a shared function between the National and County governments. The stakeholder engagement was conducted across all catchments in the country through consultative workshops, focus group discussions and key informant interviews. The input was then reviewed, analysed and subjected to further technical review and validation by stakeholders.

The various strategic objectives and actions of the strategy were clustered around eight thematic areas. The thematic areas and objectives identified include:

(1) **Water resource monitoring and assessment** – This theme includes actions to enhance the water resource classification, mapping, assessment and monitoring of all water resources. The actions in this theme also seek to enhance the capacity for water resource assessment and monitoring and sharing and utilisation of water data and information for decision making.

(2) **Water protection and conservation** – This theme involves actions to protect and restore existing freshwater ecosystems, manage and regulate water use in waters catchments and aquifers and promote protection, rehabilitation and restoration of degraded water resources and catchments.

(3) **Availability and equitable access to water for all Kenyans** – in order to enhance availability and accessibility of water to all Kenyans, the strategy proposes actions to increase per capita water availability through water resource planning, promote water use efficiency, streamline water allocation systems and enhance strategic water reserves. Additionally, in recognition that Kenya has many transboundary water resources, actions are proposed in this strategy that seeks to promote: cooperation in the management of shared water resources.

(4) **Water disaster management** – this theme includes actions seeking to strengthen prevention and mitigation mechanisms for floods, drought, landslides, pollution and other water related disasters; enhance preparedness and response to water related disasters and enhance mechanisms to promote dam safety.

(5) **Governance of inter-basin and inter-county water resources** - Following devolution, the water sector governance structure has a number of emerging issues that need to be addressed in order to have an enabling environment for sound management of the country's water resources. Thus, this strategy proposes actions to promote: fair and equitable utilisation of water resources and benefit sharing between and within counties, cooperation in the management of inter-basin and inter-county water resources and enhance stakeholder participation in management of inter-basin, intra-basin and inter-county water resources.

(6) **Water resources regulation, planning and financing** – in recognition of the importance of strong and coordinated regulatory frameworks; including planning and financing of water resources, the strategy proposes actions to: harmonise regulatory framework for regulation and management of water resources; promote implementation and enforcement of existing laws and regulations for water resources; adopt an integrated approach to water sector planning and management; strengthen the role of WRUAs in water management and catchment conservation and promote sustainable financing models for water resources management

(7) **Research, innovation, education and training** – The importance of research, innovation and training is also recognised in the strategy. The actions proposed include: Promotion of appropriate basic and applied research and innovation in the water sector; Promote investments to spur successful innovations in the water sector; Enhance dissemination and utilisation of water research outputs for improved water resource management and; Promote relevant education and training in the water sector

(8) **Cross cutting issues: Mainstreaming of climate change and gender in the water sector** – The strategy also includes proposed actions to mainstream climate change and gender into water resource regulation, monitoring, protection, conservation and management of water resources.

All the objectives and actions proposed in this strategy seek to ensure availability and accessibility of water to all. The implementation of this strategy will need to be coordinated to avoid overlaps and to create synergy. In this regard, the strategy proposes the establishment of a joint Intergovernmental Forum for Water, Environment and Natural Resources. It is envisaged that the forum will ensure that actors mainstream this strategy into their policy planning and budget making processes to ensure harmony between the NWRS and the broader socio-economic agenda of the country. Further, an overarching monitoring and evaluation framework is proposed to ensure that the Strategy is implemented efficiently as per the schedule.

Chapter One: Introduction

1.1 Background and Rationale for Strategy Formulation

Water plays a central role in all sectors of the economy; including agriculture, energy, industry, tourism, urban growth and rural development. The development, protection and allocation of water is therefore an essential prerequisite for inclusive economic growth, poverty reduction and sustainable socio-economic development.

The importance of water resources is well recognised in national policy and legal frameworks including the Constitution of Kenya, 2010 and the Kenya Vision 2030. The constitution articulates that "every person has the right to clean and safe water in adequate quantities" and that "the State shall use and manage water resources in a manner that is equitable, efficient, productive and sustainable, and in accordance with the principles of equity, security, equitable access, sustainability, productive management of resources and sound conservation". In addition, the Kenya Vision 2030 highlights that the overall goal of the Environment, Water and Sanitation sector is to attain a "clean, secure and sustainable environment" by 2030.

On the international front, the United Nation`s Sustainable Development Goals (SDGs) 2030, Africa Agenda 2063 and EAC Vision 2050 accentuate the role of water resources in promoting socio-economic development of Nations and being central to the society`s achievement of a high standard of living, high quality of life and sound health. As such, water resources are important for the prosperity of Kenya especially in the context of achieving the economic and social pillars of the Vision 2030 and the BIG Four agenda.

In recognition of the important contribution of water resources, the Government of Kenya through the Ministry of Water, Sanitation and Irrigation (MWSI) has implemented various water sector reforms to enhance the availability and access to water by all. A recent reform in the sector is the enactment of the Water Act, 2016; with the main aim of aligning the sector to the Constitution of Kenya 2010. The Act in Article 10 (1-5) provides that "the Cabinet Secretary shall, within one year of the commencement of the Act and every five years thereafter, formulate a National Water Resource Strategy".

The previous National Water Resources Strategy (NWRS) covered the period 2010-2016. The formulation of a new strategy was therefore, required in in accordance with requirements of the Water Act, 2016. The purpose of the new strategy is to provide the Government`s plans and programmes for the regulation, monitoring, protection, conservation, and management of

water resources for the period 2020-2025. The main thrust of the strategy is to guide the public and private sector and civil society's efforts in addressing emerging issues and challenges facing the Kenya's water sector. The challenges include: lack of universal access to safe water, water scarcity, catchment degradation, encroachment of riparian land and wetlands, pollution, uncontrolled and unregulated use of water resources, flooding, management of transboundary resources, limited technical and enforcement capacities, rising water demand, climate variability and climate change.

The new strategy is formulated in the context of the constitutional requirement that every person has the right to clean and safe water and that Kenya is a water scarce country with low annual renewable freshwater availability. In formulating this strategy, the government recognises that the management of water resources is multi sectorial and is a shared responsibility of all Kenyans. This strategy has taken into consideration the country's new political system and structure of government and the ongoing institutional and policy reforms in the water sector. In addition, the formulation of the strategy has also considered;

- Lessons from the performance of the lapsed WRM strategies (2007-2009, 2010-2016)
- The current implementation framework for the regulation, monitoring, protection, conservation and management of water resources in line with the Water Act 2016, the Constitution 2010, Vision 2030, National Water Master Plan 2030, SDGs and other national and international legal frameworks
- The need for multi-public and private sector involvement in the management of water resources and that investment and financing requirements for the sector have not been fully realised

1.2. Overview of Water Resources Management in Kenya

The legal, policy, and institutional framework for management of water resources is anchored in the Constitution of Kenya (2010) and various enabling legislations. The Constitution pronounces that the National Government is responsible for the regulation and management of the national water resources while catchment management is a shared responsibility between the National Government and County Government. As such, the national government has a key role in enacting policies of water resources management, regulation of water resources. On the other hand, the county governments have a role in protecting water catchments and providing water services to the citizens.

In addition to the Ministry responsible for Water – the Ministry of Water, Sanitation and Irrigation - and County Governments, the other key players in management and protection of water resources include: government agencies such as NEMA, NDMA, KWS, KWTA, KFS and KMD; State enterprises such as KenGen and NIA; Bilateral, Multilateral agencies and Non-State Actors including Kenya Water Partnership and WWF; Regional Development

Authorities such as TARDA, KVDA, LBDA; Research and training institutions such as KEWI, KIPPRA, Universities and Private business bodies such as KEPSA, Kenya National Cleaner Production, Waste Recyclers etc. Based on The Water Act (2016), the governance and institutional framework in water sector is shown in Table 1.1.

Table :1.1 Kenya`s Institutional Framework of the Water Sector

Role	Agency	Key Function (s)
Policy	Ministry of Water, Sanitation and Irrigation (MWSI)	• Overall policy formulation of the water sector in the country, Resources mobilisation and capacity development and providing an enabling environment in the sector
National Implementing Agencies	National Water Harvesting and Storage Authority (NWHSA)	• Development and management of national public water works for water resources management and flood control, Maintain and manage national public water works infrastructure for water resources storage and undertake strategic water emergency interventions during drought.
	Water Tribunal (WT)	• Hearing and determination appeals of parties directly affected by the decisions of water sector agencies and any other dispute concerning water resources or water services.
	Water Sector Trust Fund (WSTF)	• Provision of conditional and unconditional grants to Counties (exclusive) and to assist in financing the development and management of water services in underserved and marginalised areas.
	Kenya Water Towers Agency (KWTA)	• Coordinate and oversee the sustainable management of all water towers in the country and provide framework for the long term sustainable conservation and management of these natural resources.
	Regional Centre on Groundwater Resources Education, Training (RCGW)	• Research, training, education in groundwater resources management • Promote regional cooperation on management of groundwater systems
Regulation	Water Resources Authority (WRA)	• Formulation and enforcement of standards, procedures and Regulations for the management and use of water resources and flood mitigation • Regulate the management and use of water resources and enforce the regulations made under the Water Act (2016) including; receiving water permit applications, collection of water permit fees and water use charges and determination of the permit and water use fees.
	Water Services Regulatory Board (WASREB)	• Determine and prescribe national standards for the provision of water services and asset development for water services providers. • Set standards, monitor implementation and enforce compliance of the standards
Service Provision	Water Works Development Agencies (WWDAs)	• Undertake the development, maintenance and management of the national and/or county public water works within its area of jurisdiction;
	Basin Water Resources Committees (BWRCs)	• Management of the water resources within a respective basin through; water protection and conservation, use and apportionment of water resources through permits • Facilitation of the establishment and operations of water resources user associations and equitable water sharing within the basin area through water allocation plans
	Water Service Providers (WSPs)	• Provision of water and sanitation services within a specified area and development of county assets for water service provision.
	Water Resource Users Association (WRUAs)	• Collaborative management of water resources and resolution of conflicts concerning the use of water resources at the basin level.

Source: Adapted from the Water Act, 2016

In light of the different functions and mandates of the various water sector agencies ,the development and successful implementation of the NWRS requires the collaborative efforts of various water sector actors .Figure 1.1 shows the interrelationships of different water sector players and key roles for each of the actors along strategic areas of the NWRS.

Figure 1.1: The role of various water sector players in NWRS
Source: Water Act, 2016; Constitution of Kenya, 2010; NWMP 2030

1.3 Alignment of the NWRS to National Priorities and Obligations

1.3.1 Introduction

In developing this strategy, broad policies, legislations and strategies related to Water Resources Management and Regulation were reviewed. The documents reviewed included the Constitution of Kenya, 2010, Vision 2030, the Water Act, 2016, The National Water Policy (in Draft), Ministry of Water and Sanitation Strategic Plan (2018-2022) and the National Water Master Plan 2030 among others. In addition, the review was extended to global and regional policy priorities and obligations including the United Nations Sustainable Development Goals (SDGs), African Union Agenda 2063 and the East Africa Community Vision 2050. The specific priorities and obligations are outlined below;

1.3.2 Constitution of Kenya (2010)

The Constitution of Kenya (2010) provides broad principles that must govern the management of public resources – including water resources. Article 43 of the Constitution requires that every person has the right to clean and safe water in adequate quantities. As such, access of these services must be equitably designed to ensure reach by minorities and marginalised groups in line with Article 56 which requires that these groups to have reasonable access to water resources. In addition, Article 69 of the supreme law declares that the "state shall ensure sustainable exploitation, utilisation, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits", among other obligations. Further, the management of water resources shall be held, used and managed in a manner that is equitable, efficient, productive and sustainable as per Article 60 of the constitution.

The Constitution also provides that the management of water resources is a shared function between the National and County governments. The National government is responsible for the management of the water resources while catchment management function is shared between National and County governments. Under Schedule IV of the Constitution, County governments are required to implement specific national government policies on natural resources including water conservation. In addition, counties are required to engage in county public works and services for storm water management systems in built-up areas and provision of water and sanitation services. Additionally, County governments have the responsibility of managing Water Service Providers - either singly or jointly with other Counties.

1.3.3. The Draft National Water Policy

The Government Sessional Paper No. 1 of 1999 on Water Resources Management and Development underscored the importance of prudent management of water resources in realising the Kenya`s development goals. While the policy provided the environment for the water reforms and subsequently the Water Act of 2002, there remains challenges in the water sector. The incoming Draft National Water Policy 2020 is based on the achievements of the water sector reforms and the need to address the emerging challenges. The Policy aims at propelling the sector to the next level of development in order to contribute to the achievement of national goals and the Sustainable Development Goals (SDGs). In addition, the policy seeks to align water resources management with the new structure of government.

1.3.4 Ministry of Water and Sanitation Strategic Plan (2018-2022)

The Strategy recognises that the Ministry`s mandate is to develop and manage all water resources (including) transboundary waters as per the Executive Order No. 1 of 2018 on organisation of the Government. In line with this function, the Ministry has identified key strategic objectives in line with its mandate. The objectives include: (1) enhance sector

governance and leadership through formulation and implementation of various policies, bills and strategies in full compliance with the Water Act, (2) increase per capita fresh water endowment through management, protection and conservation of water resources, (3) increase the percentage of national population with access to safe water from and (4) increase the percentage of national population with access to improved sanitation. Others are to increase the water storage per capita levels, build human resource capacity in the water sector, undertake research, development and adoption of appropriate technologies through the establishment and operationalisation of water research institutions and, increase water sector financing.

To enhance coherence in policy development and implementation, efforts have been made to ensure that the NWRS (2020 -2025) is well aligned with the mandate and the strategic objectives of the ministry.

1.3.5 Water Act, 2016

The Water Act (2016) provides the framework for the regulation, management and development of water resources in Kenya. Section 10 of the Act requires the formulation of a National Water Resources Strategy to provide the Government's plans and programmes for the protection, conservation, control and management of water resources every five years. The National Water Resources Strategy shall contain, among other things, details of-(a) existing water resources and their defined riparian areas; (b) measures for the protection, conservation, control and management of water resources and approved land use for the riparian area; (c) minimum water reserve levels at national and county levels; (d) institutional capacity for water research and technological development and e) functional responsibility for national and county governments in relation to water resources management. The Act also stipulates the powers and functions of different agencies in managing and supporting the Water Sector.

1.3.6 Kenya Vision 2030 and MTP III

The Kenya Vision 2030 is the long-term development blueprint for the country and is motivated by a collective aspiration for a better society by the year 2030. The aim of Kenya Vision 2030 is to create "a globally competitive and prosperous country with a high quality of life by 2030". Under the Social Pillar of the plan, the vision for water and sanitation is to ensure that improved water and sanitation are available and accessible to all by 2030.

To support the economic pillar of the plan, it`s expected that the area under irrigated agriculture be increased to 1.2 million Ha by 2030 in order to increase value in agricultural production. To support manufacturing; water allocated for industrial use will increase significantly if the industrialisation status is to be achieved by 2030. The vision also recognises the need for water resources to support generation of more energy and increase efficiency in the energy sector.

In the intervening period, the Medium-Term Plan III (2018-2022) of the Kenya Vision 2030 intends to focus on conservation and management of water catchments and wetlands. This will be achieved through rehabilitation and protection of rivers and water towers. In addition, the MPT III will ensure scale up of the management of trans-boundary water resources through various programmes. The plan will seek to promote water harvesting and storage through increased water storage capacity via dam construction and rainwater harvesting via construction water pans, small dams and water harvesting structures in ASALs.

1.3.7 National Water Master Plan 2030

The NWMP 2030 presents a long-term framework for water resources development and management in line with the country's social and economic development agenda. The key objectives of the plan include;

- Improved water allocation considering; environmental and ecological requirements, international obligation and inter-basin water transfer and basic water needs
- Improved access to water and sanitation are available and accessible to all by 2030
- Irrigation development is undertaken to the maximum within available water resources towards the national target in order to increase agricultural production and, hydropower development is undertaken to its maximum potential
- Ensure that water resources are managed, regulated and conserved in an effective and efficient manner by involving the stakeholders, guaranteeing sustained access to water and equitable allocation of water while ensuring environmental sustainability.

1.3.8 Other Relevant National Policies and Legislations

The other national policies relevant to water resources are;

a) **National Wetlands Conservation and Management Policy 2014 (Sessional Paper No. 10 of 2014):** This policy sought to ensure prudent use and sustainable management of wetlands in order to enhance sustenance of the ecological and socio-economic functions of Kenya's wetlands for the benefit of present and future generations. As such, the strategic objectives and actions around water protection and conservation have been derived from the provisions of this policy.

b) **The Forest Policy of 2016:** This policy recognises that the unequal pattern of land ownership and the expansion of agriculture into marginal areas and forests have been among the major driving forces behind land and natural resource degradation, and the loss of large areas of water catchment and wildlife habitat. It therefore calls for the intensification of the management of water catchments to enhance the conservation of water, regulation of river flows, and to reduce siltation and sedimentation of water reservoirs, as well as for special consideration to conserve ecologically fragile areas in order to conserve biodiversity, soil and water. It recognises the need to continuously

strengthen cross-sectorial linkages between the forest sector and other related sectors to generate synergy in the broad environment sector for growth and development.

c) **The National Environment Policy (2013):** The thrust of this policy is to promote a better quality of life of the citizens through sustainable management and use of the environment and natural resources. The policy seeks to achieve this goal through an integrated approach to planning and sustainable management of the country`s environment and natural resources, strengthening the legal and institutional framework and promote and supporting research and capacity development in the sector.

d) **Climate Change Act (2016):** the Act seeks to guide the development, management, implementation and regulation of mechanisms to enhance climate change resilience and low carbon development for the sustainable development of Kenya. The Act further recognises that climate change is a cross cutting and must therefore be mainstreamed into planning and management of natural resources including water.

e) **Irrigation Act of 2012:** The Act created a Board that is responsible for the development, control and improvement of national irrigation schemes in Kenya. The Act also gives powers to the board (together with WRA) to formulate, and be responsible for the execution of, policy in relation to national irrigation schemes. This Act therefore provides important guidelines for managing water resources with respect to irrigation.

1.3.9 Sustainable Development Goals (SDGs) of 2030

Kenya subscribes to the collective international call to global action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. The SDG No 6 seeks to ensure availability and sustainable management of water and sanitation for all by the year 2030. The specific targets are to;

- Achieve universal and equitable access to safe and affordable drinking water for all.
- Achieve access to adequate and equitable sanitation and hygiene for all, and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
- Improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and increasing recycling and safe reuse by 50 percent globally
- Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity
- Implement integrated water resources management at all levels, including through trans boundary cooperation as appropriate

- Protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

The achievement of the SDG that relates to water for all is therefore a key enabler for ensuring that the people have a desirable quality of life and economies are thriving.

1.3.10 Africa Agenda 2063

To support the Aspirations of the African people by 2063, the key issues that relate to water include;

- A high standard of living, and quality of life, sound health and well-being where people have access to all the basic necessities of life such as water and sanitation
- Being among best performers in global quality of life measures through provision of basic services including health, nutrition, education, shelter, water and sanitation.
- Equitable and sustainable use and management of water resources for socio-economic development regional cooperation and the environment
- Having the necessary infrastructure (a Pan-African pipeline for water) to support Africa's accelerated integration and growth, technological transformation, trade and development.

1.3.11 East African Community Vision 2050

The EAC Vision 2050 envisages a prosperous, competitive, secure and politically united region by 2050. The vision is to be "An upper-middle income region within a secure and politically united East Africa based on principles of inclusiveness and accountability". The issues that relate to water include;

- Increased investment and enhanced agricultural productivity for food security and a transformation of the rural economy by increasing irrigation among other strategies.
- Sustainable utilisation of natural resources, environment management and conservation with enhanced value addition through managing aquatic and terrestrial ecosystems including: freshwater and marine & coastal resources and wetlands forestry amongst other biodiversity and natural resources.
- Increase access to basic needs including access to water and improved sanitation.

From the review of the national and international priorities and obligations, there is a strong commitment from government towards the management of water resources. Similarly, the country has a strong policy and legal framework to support the attainment of the constitutional provisions on water and the SDGs. Based on the review of the overarching national and international priorities and obligations, the overall principles adopted in the formulation of the National Water Resources Strategy are outlined in section 1.4 below.

1.4. Guiding Principles in Development of the Strategy

The NWRS (2020-2025) is anchored on fundamental principles derived from a number of national (e.g. the Kenya Constitution) and international legal obligations for the management of water resources. In particular, the strategy is anchored in the Dublin-Rio principles which are internationally recognised principles underpinning Integrated Water Resource Management (IWRM). The following principles guided the formulation of the NWRS:

i) **Resource efficiency:** The strategy recognises that water is a finite and vulnerable resource, essential to sustain life, development and the environment. Therefore, there is need to achieve sustainable use of water by making progressive adjustments to water use with the objective of striking a balance between water availability and legitimate water requirements, and by implementing measures to protect water resources. The strategy will therefore promote measures to increase the overall economic value of water resources through more productive use and taking the whole water cycle into account.

ii) **Intergovernmental and participatory:** The strategy recognises distinctiveness and interdependence of the two levels of government in line with Kenya's Constitution and the Intergovernmental Relations Act, 2013. It has adopted a cross-sectorial approach which takes advantage of potential synergies.

iii) **Economic value of water:** The strategy recognises that water has an economic value in all its competing uses and should be recognised as an economic good. Thus, there is need to achieve efficient and effective water use for optimum social and economic benefit.

iv) **Good governance:** The development and implementation of the NWRS 2020-2025 shall respect the national principle of governance as recognised under article 10(2) of the Constitution of Kenya 2010 and include participation, inclusiveness, rule of law, respect for human rights, transparency and accountability.

v) **Sustainable development:** The strategy recognises the need to nurture healthy ecosystems and support sustainable management of land, water and natural resources. This entails improving efficiency in the use of water resources; direct action to conserve, protect water resources. This is in line with the United Nations Sustainable Development Goals (SDGs).

vi) **Integrated planning and resource management:** The strategy recognises that planning of water sector activities should take a transboundary, national, cross-county, county and community approach towards the development of national integrated investment and financing plans. The management and development of water resources shall consider different and competing interests of groups, sectors and the needs of the environment. Planning for water service and resource management should be integrated.

vii) **Polluter – pays – Principle:** The NWRS embraces the Polluter – pays – Principle to ensure that the environmental and social costs of unsustainable production and consumption activities are met by economic agents responsible for them.

viii) **Equity principle:** The NWRS aspires to promote equity and inclusivity in the management and access to water resources. The strategy recognises that equity includes; equity in access to water services, equity in access to water resources and equity in enjoying the benefits derived from water resources. The equity principle also means that special attention must be given to the needs of those that were historically denied access to water or to the economic benefits of water.

1.5 Approach and Methodology for Developing the NWRS

This strategy has been prepared through a broad based participatory and consultative approach. The process of developing the strategy followed five (5) key phases; inception, baseline assessment and visioning, stakeholder consultation, technical review and validation. The initial phase in the formulation process involved various inception activities which included; document review, resource mobilisation, mapping of the key stakeholders, development of the strategy formulation roadmap and identification of thematic areas. The second phase in the process was a baseline assessment and visioning. This involved an in-depth review of past NWRSs and analysis of the current WRM system, including the user perspective and taking account of existing interventions and programmes. Using various analytical frameworks including SWOT analysis, PESTEL and The Balanced Score Card, the current and future needs for water resources, existing gaps and opportunities were identified. In this phase the strategic direction, objectives and issues for WRM were also identified.

The third phase involved consultations with relevant water resources stakeholders. The various stakeholders who were engaged were drawn from various institutions that are responsible for water regulation and management; including the Ministry of Water and Sanitation, key water sector agencies, other government Ministries and Agencies, County governments, research and training institutions, water service providers and community associations. The main methods used for stakeholder engagements included consultative workshops, focus group discussions and key informant interviews. The stakeholder consultation was followed by analysis of the stakeholder input, drafting of preliminary NWRS and a technical review of the preliminary drafts by senior technical staff of the Ministry Water, Sanitation and Irrigation and the Water Resources Authority. The final phase of strategy involved validation of the draft National Water Resources Strategy (2020-2025).

Chapter Two: Performance of Previous Water Resource Management Strategies

2.1 Introduction

The performance of previous NWRM strategies (2006-2008 and 2009-2016) were analysed in terms of achievements, challenges and lessons learnt in order to inform the formulation of the 2020-2025 strategy. The performance was extended to cover past Catchment Management Strategies (CMS). The previous strategies focused on a number of thematic areas including improving water resource assessment, provision of accurate water data on water use and demand, promoting equal access to water for all Kenyans, integrated land and water resource planning and management including pollution control, providing mechanism for water sector financing, mainstreaming gender in the water sector, development of policies for disaster management and integration of sector and transboundary water policies. This chapter therefore provides the key achievements and challenges of strategies in each of the thematic areas. In addition, a summary of key lessons learnt is presented.

2.2. Key Achievements and Challenges of the Past Strategies

a) Improving water resource assessment

In order to collect, analyse and disseminate reliable information on water resources, the previous NWRM strategies sought to strengthen the existing mechanisms of water resource assessment and monitoring. This emerged from the fact that by 2001, the country had a 78 percent reduction in functioning hydrometric stations (from 923 registered in 1990 to 204 working stations in 2001). Through various strategies by 2016, over 450 hydrometric stations and 140 hydro meteorological stations had been either rehabilitated or installed across 6 catchments. In addition, 15 river gauging stations had been upgraded to telemetry.

While the monitoring network has been upgraded, there is still low capacity in terms the required number of stations in different catchments and human and technical capacity in water resource assessments. This situation is also made worse by many cases vandalism of the monitoring equipment. Despite these challenges, the analysis of surface water resources in terms of quantities and safe yields has been established across the six catchments. However, assessment of ground water and delineation of aquifers is still limited. While there are other government and private sector agencies conducting water assessments and monitoring, sharing of water information is still very limited. Improving water resource assessments and monitoring thus continues to be a key strategic issue in Kenya's water sector.

b) Provision of accurate water data on water use and demand

The previous strategies sought to improve provision of accurate water resources data on water resource use and demand. This objective was tied to increasing water availability and promoting equal access to water for all Kenyans. This involved establishing estimates of the W ater Resources (WR) availability versus water demand (WD) as shown in Table 2.1.

Table :2.1 Available Water Resources and Water Demands by Catchment Area

Catchment Area[1]	2010			2030			2050		
	Water Resources (a)	Water Demand (b)	(b)/(a)	Water Resources (c)	Water Demand (d)	(d)/(c)	Water Resources (e)	Water Demand (f)	(f)/(e)
LVNCA	4,742	228	5%	5,077	1,337	26%	5,595	1,573	28%
LVSCA	4,976	385	8%	5,937	2,953	50%	7,195	3,251	45%
RVCA	2,559	357	14%	3,147	1,494	47%	3,903	1,689	43%
ACA	1,503	1,145	76%	1,634	4,586	281%	2,043	5,202	255%
TCA	6,533	891	14%	7,828	8,241	105%	7,891	8,476	107%
ENNCA	2,251	212	9%	3,011	2,857	95%	1,810	2,950	163%
Total	**22,564**	**3,218**	**14%**	**26,634**	**21,468**	**81%**	**28,437**	**23,141**	**81%**

Source: The National Water Master Plan 2030

Table 2.1 shows that by the year ,2010 the national average demand for available water resources stood at .14% However ,due to a projected increase in water demand ,especially for irrigation and commercial uses ,the WR and WD ration would increase to 81% by2030 making the water balance very tight across all catchments .Based on current water demand and future national development plans ,it is estimated that Kenya could face a 31 percent gap between water demand and practically available water supply by .2030 The anticipated supply-demand gap is likely to be exacerbated by climate change ,catchment degradation and increased hydrological variability .The water supply-demand gap increases risks for all water users ,including farmers ,energy producers ,industry ,and pastoral groups .This therefore, justifies the need for enhanced and periodic water resource assessments as a strategic objective over the planning period of the new strategy.(2018-2023)

c) Improving availability and accessibility of water to all Kenyans

Perhaps the most significant achievement in enhancing water accessibility is the recognition that access to water is a right in the Kenyan Constitution of 2010. Thus, the Water Sector Trust Fund (WSTF) which gives priority to resource allocation in rural and urban areas was established. Consequently, rural water coverage increased from 47.1% in 2013 to over 50% in 2017. In addition, social (flat rate) tariffs have been adopted to make water affordable to the poor and support for the development of various water supplies projects including small

community water projects has increased dramatically. Similarly, the Water Harvesting and Storage Authority has been established to develop strategies for water harvesting and storage including rain water harvesting and flood water control. However, catchment areas except LVNCA will have large water deficits by 2030 a situation that is projected to be worsened by the effects of climate change. While the constitution provides access to water as a right, there is no clear legal framework on how this is going to be achieved. In addition, to too much reliance on surface water is considered to be unsustainable. As part of efforts to increase water availability, the National Climate Change Action Plan 2018 and Adaptation Technical Analysis Report 2018-2022 envisions mapping and identification of two aquifers for artificial groundwater recharge (AGWR)/ Managed Aquifer Recharge (MAR) to increase groundwater storage and to enhance recovery of depleted aquifers by 2025. In light of the foregoing, water availability and access will continue to be a key strategic issue in the management of water resources.

d) Conservation and protection of water resources

The previous strategies prioritised integrated land and water management so as to conserve and protect water resources. The Water Act, 2016 recognises the need for protection of the water resources through resource-directed measures including rehabilitation of urban rivers and rehabilitation and protection of the water towers. Specifically, the Kenya Water Towers Agency was established to coordinate efforts in the rehabilitation and restoration of water towers. In addition, innovative mechanisms for water protection and conservation such as Payment for Ecosystem Services (PES) have emerged. The Imarisha Naivasha and the Upper Tana-Nairobi Water Fund are some examples of PES schemes that pay land owners and smallholders in the upper catchment to address erosion and poor agricultural practices.

Despite recent enforcement efforts by both national and county governments, deforestation and degradation of wetlands and riparian areas continues to be a challenge. This is associated with demonstrable drop in the aquatic ecosystem health across the country and increased stress on water resources. The responsibilities for water protection and conservation are held by many state agencies including the Water Resource Authority, Water Towers Agency, Kenya Forest Service among others. A lack of a clear coordination mechanism between these organisations has been blamed for poor implementation of water protection and conservation policies. In addition, there is lack of harmonised framework for implementation of the polluter pay principle. The challenge posed by continued degradation of water ecosystems justifies water conservation and protection as a strategic theme in the 2018-2022 water strategy.

e) Integrated planning and financing of water resources

A key focus of the previous strategies was to enhance integrated planning and provide a mechanism for funding the water sector. In order to improve planning in the sector, the

National Water Master Plan (NWMP) in the water sector was developed. The NWMP sought to take a long-term view of the availability, reliability, quality, and vulnerability of country's water resources up to the year 2050. In addition, the NWMP was integrated with Vision 2030`s MTP III. Given the scale of the water sector`s financing requirements, public funds are inevitably insufficient to meet the investment needed to achieve water security, and hence new sources of financing need to be leveraged on.

In Kenya, water services are provided through decentralised, publicly-owned Water Service Providers (WSPs). Traditionally, these WSPs have not been considered creditworthy, and hence have struggled to obtain commercial financing to invest in their water infrastructure. In response to this, development organisations like the World Bank, USAID and KfW are helping to develop risk sharing mechanisms which, combined with technical support, will enhance the borrowing capacity of WSPs. This will enable them invest both in supply-side expansion infrastructure and demand-side non-revenue water reduction measures. To bridge the financing gap, public-private partnerships (PPPs) are promoted under MTP III. Some public –private partnerships such as Imarisha Naivasha and the Upper Tana Nairobi Water Fund have already showing signs of success. However, financing of the water sector continues to be limited coupled with diminishing public funding. In addition, there is lack of harmonisation and weak implementation and monitoring of water sector plans and strategies.

f) Gender mainstreaming

The previous strategies sought to mainstream gender in the water sector by providing opportunities for both men and women to fully participate and benefit from developments in the water sector. The involvement of women in decision-making was identified as key in this strategy. In addition to gender equality being recognised in the Constitution, the Government has created the Youth Fund and the Women Fund to increase access to credit to these groups. In some areas women and youth have obtained the funds and invested in retail of water to communities (water kiosks) or in development or expansion of irrigation development. In addition, gender issues such as low participation by women in planning for services, and in accessing paid work in water and sanitation infrastructure development initiatives are still outstanding.

g) Development of policies for disaster management

The previous strategies recognised that Kenya is susceptible to water related disasters including drought, floods and landslides. Implementation of the previous policies and strategies has led to the establishment of Drought Contingency Fund (DCF) under National Drought Management Authority (NDMA) to cushion lives and livelihoods of communities vulnerable to drought. In addition, there have been efforts to improve dissemination of Early Warning information through media and bulletins. Efforts to address water related disasters

include; establishment of WSTF to develop incentive programmes for disaster management, climate change adaptation and mitigation. In addition, the National Water Harvesting and Storage Authority (NWHSA) was established to undertake water emergency interventions during drought and floods. While a number of interventions to respond to water disasters have been implemented, water disasters continue to cause damage in Kenya. This is in part explained by increased climate variability and extreme weather events. Additionally, there are many actors who have an uncoordinated and fragmented approach to flood and drought management. As a result, there is limited capacity for disaster response and risk reduction.

h) Integration of sector and transboundary water policies

Kenya has made some progress towards promoting better management of transboundary waters with her neighbours. The Constitution, and the Water sectors long term vision the National Water Master Plan (NWMP) of 2030 envisage the need for the country to have clear international treaties on the transboundary waters with related countries so as to provide a basis for allocation of international waters.

Policies and laws such as the National Water policy of 1999, Water Act of 2016 sought to strengthen management of water resources but did not provide a clear road map to address issues of transboundary water resources. Moreover, the First NWRS (2007-2009) recognised the importance of ensuring that Kenya's shared water resources are jointly managed within agreed frameworks to ensure equity and to avoid conflict. However, this plan had gaps in providing a clear road map for managing these shared resources. In response to the need to have a framework for promoting transboundary resources, the MWSI has developed a draft Transboundary Water Policy which seeks "to provide a roadmap for cooperation in attaining sustainable, equitable and reasonable utilisation of the shared water resources of Kenya". This is against the backdrop of increase in competition water resources both nationally and internationally.

2.3 Lessons Learnt from Past Strategies

The performance of the past strategies provides key lessons that are useful for development and implementation of the 2020-2025 NWR strategy. The key lessons in include;

i) The need to increase human and technical capacity in the regulation and management of water resources

ii) The need to ensure that a well - coordinated approach to implementation of various sector policies and strategies across different agencies and stakeholders.

iii) The need to have integrated approach of ensuring that the models for water sector financing and investment are practical, adequate and sustainable.

iv) The need for continuous and effective monitoring and evaluation of sector strategies to ensure that emerging issues are addressed in a timely manner.

v) The need for sustainable funding mechanisms to finance the implementation of the basin and sub catchment water resource management plans

vi) The need to develop a framework that reviews and aligns all sector strategies and plans to the existing laws, national and international imperatives.

Chapter Three: Strategic Framework

3.1 Introduction

The Ministry of Water, Sanitation and Irrigation has a mandate to provide policy direction for the water sector. The vision of the Ministry is "to ensure water resources availability and accessibility by all'. In line with this vision, various programmes including those targeting to improve infrastructure and the policy and regulatory environment have been implemented. While substantial progress has been achieved, a number of challenges are outstanding. To redress the challenges, the government in consultation with various stakeholders has outlined a number of strategic objectives and actions that will pursued to enhance availability and access to water resources by all Kenyans.

The strategic actions are organised around eight (8) thematic areas which align with the national and international priorities and obligations and emerging challenges in the water sector. The actions are intended to support the government's continued efforts to ensure access to water by all Kenyans. Each thematic area outlines the objectives and specific strategic actions that will be guide efforts towards realisation of the Ministry`s vision.

3.2 Water Resource Monitoring and Assessment

3.2.1 Status and Context

The attainment of the government's target of ensuring improved availability and access to water by all requires a robust and comprehensive assessment and monitoring system which accurately tracks the quantity and quality of water resources for effective management, regulation, allocation and enforcement of equitable provision of water for all. The need for a comprehensive system is important in light of the changing water requirements which are occasioned by; rising water demands due to increasing population and urbanisation, climate variability and increase in the number of extreme weather events, increased threats to water resources due to pollution and catchment degradation. This need is recognised by The Water Act of 2016 sec 21 (1) which requires that a National Monitoring and Information System be developed to record and provide data on the development, implementation and monitoring of national policy on water services and to provide information to water services institutions, consumers and the public.

The Water Resources Authority (WRA) which is charged with the responsibility of conducting water resource assessments, collects data on the surface water and groundwater levels, water quality, groundwater and water use. In order to improve its data monitoring network, WRA

has invested in infrastructural rehabilitation and upgrading of existing networks. While a large proportion of the water monitoring stations are manual, there are recent efforts to upgrade the stations into telemetric status. The telemetric hydro-met monitoring stations will provide real time data and reduce the lapses in decision making due to lack of timely data sourcing and modelling. The real time data will also be crucial for setting early warning systems for water related disasters.

3.2.2 Challenges and Emerging Issues

Despite the progress, there are still a number of challenges facing water resource assessment and monitoring in the country. The Water monitoring network is based on limited stations which are not representative of the varied catchment conditions. In addition, the monitoring network frequently experiences losses due to flooding, ageing and vandalism. A large proportion of the monitoring stations are manual, although there is an attempt to upgrade the stations into telemetric status. Equally, the data collected needs to be entered in the database for updating of the rating curves – sometimes this is not done on time reducing the ability of the data to support real time decision making.

Due to limited resources (financial, technical, human and absence of dedicated boreholes), ground water assessment is only carried out sporadically. As a result, the data available is scanty and inconsistent and may not have significant impact on the trends on aquifer. In addition, data for hydrological variables is to a large extent acquired for point locations – e.g., hydrological and weather stations and treated as representative of a large region. But for a complex territory like Kenya, with its highly variable land cover and topography, point-data are less successful in characterising the area. This is particularly true when point stations are very far apart. Consequently, there is lack of consensus on the per capita water availability in the country. While the National Water Master plan estimated the per capita water availability at 1025, other reports have suggested that it may be much lower justifying the need to map and assess all water resources in Kenya. In addition, National hydrological and hydrogeological surveys have not been conducted for a long time which makes it difficult to determine the catchment water resources potential and yield for both surface and ground water. Similarly, while over 80 percent of the country is classified as Arid or Semi-Arid (ASAL), there are no efforts to monitor and quantify water flows arising from flash floods. Quantifying the flows from flash floods is critical towards water harvesting for livestock and irrigation.

The Water Act (2016) sec 20 (1) thus provides for the WRA to classify all water resources and determine the quality objectives. While classification of water and determination of quality is an important objective, both human and technical capacity in carrying out water resource assessments is limited. Additionally, while there are many actors – public and private conducting water resource assessments and monitoring, information sharing is limited and often sharing attracts a fee. Consequently, the state of water resources in Kenya in terms of quantity and quality is not adequately established.

3.2.3 Strategic Objectives and Actions

Objective 1: Enhance the mapping and assessment of all water resources

i) Map and delineate all the existing water resources (including ground water aquifers, ground water recharge zones, lakes and wetlands) and their defined riparian areas and sea lines

ii) Classify water resources in accordance with the prescribed classification criteria and the requirements for achieving the objectives

iii) Estimate the catchment water resources potential and yield for both surface and ground water

iv) Determine minimum water reserve levels at national, catchment and county levels, and incorporation of current emerging issues

v) Undertake flash flood monitoring and quantify the flows with a focus on arid and semi-arid areas

vi) Undertake regular and periodic hydrological and hydrogeological assessments across all the catchments

Objective 2: Strengthen and enhance water resource monitoring

i) Determine water information needs across all the catchments and for various users including County governments

ii) Modernise and extend water resource monitoring networks across all water catchments including a modern integrated system for data collection, storage and retrieval

iii) Establish reference points that are representative of the rainfall regime, stream flow characteristics, surface water and ground water quality status

iv) Improve technology for water resource assessment

v) Develop guidelines and operational plans for monitoring surface water, ground water and water quality based on international standards

vi) Develop and implement the water Resource Quality Objectives (RQOs) for the various categories of water resources

vii) Enhance the scope of water monitoring to include water demand and use in various catchments

viii) Build capacity and enhance the involvement of WRUAs and other local communities in water resources monitoring

Objective 3: Enhance the capacity for water resource assessment and monitoring

i) Establish the current and future technical and human resource capacity needs for water resource assessment and monitoring at the national, catchment, county and community levels.

ii) Address water resource assessment and monitoring capacity gaps through training, recruitment and infrastructural development including capacity of accredited laboratories

iii) Establish a certification system for water assessment and monitoring including setting up of a referral water laboratory

Objective 4: Develop an integrated system for monitoring and sharing of water data and information for decision making

i) Establish an integrated information system on water resources ('e-water data systems') that is able to meet the information needs of all water stakeholders.
ii) Develop regulations for sharing and utilisation of water information including de-commercialising of water data and information
iii) Develop and regularly update a water resources atlas and spatial water availability map to inform planning and development
iv) Promote collaboration in assessment and monitoring of water resources among actors and across catchments
v) Develop a national register for all land marked as either riparian and wetlands through a multi-agency approach

3.3 Water Protection and Conservation

3.3.1 Status and Context

Demands on Kenya's finite water resources are increasing characterised by competition among various uses including agricultural, industrial, power generation, mining, commercial and domestic uses. In order to meet these demands in a water-scarce country, all sectors must engage in conservation and protection of water sources including catchments, ground water aquifers and wetlands. This need for water conservation and protection is articulated in various plans and legislations; The Water Act 2016, EMCA 2015 and MTP III of Vision 2030. In addition, the government commitment to this cause is demonstrated by the establishment of the Land and Environment Court to enforce the right to a clean and healthy environment. Other key efforts to promote conservation include: the establishment of The Kenya Water Towers Agency (KTWA); implementation of the polluter pays principle to remedy the effects of pollution while balancing with the need to use water as a factor of production and; provision of financial and technical support to WRUAs for implementation of sub-catchment development plans.

Notwithstanding these efforts, there has been a demonstrable drop in the health of the aquatic ecosystem across the country and increased stress on water resources. This is largely due to; increasing pressures from climate change, population growth, over utilisation of the water resources, poor land-use practices, degradation of water catchments and pollution of water sources. In urban areas such as the City of Nairobi for example, rivers collect most of the wastes generated in the city and its waters are heavily polluted by solid, liquid and organic wastes. The polluted water has a strong impact on human beings and other living organisms and the environment in general.

Lakes both natural and man-made, are essential elements of the overall water resources system and are important natural habitats for global biodiversity. However, lakes and their basins are fragile and complex systems that are under serious stress and have some unique characteristics, often with peculiar management needs. In Kenya, lakes have been inadequately managed and conserved due to the sectorial management approach, which creates conflict of interest and does not appreciate the inter-connectedness and inter-dependency of the various components of such aquatic systems. Equally there is no specific institution responsible for managing the lakes and catchment as a whole at the national level, and it is desirable that a coordination framework is established so that synergies can be built across sectors to address the lake basin management issues and their sustainable use. While the need to set up the National Lake Basins Management Secretariat has been recognised in the Draft National Lake Basin Management Strategy, its implementation is pending. This coupled with other factors such as inadequate institutional and capacity and financial backstopping lead to a complex convergence of multiple factors that make it very difficult to ensure proper and sustainable management of lakes and their basins.

3.3.2 Challenges and Emerging Issues

While some impressive progress has been made in creating an enabling environment for the protection and conservation of water resources, the following challenges are still outstanding;

- Many actors responsible for water conservation and protection leading to duplicity of roles, uncoordinated efforts and gaps in implementation
- Lack of capacity to enforce various laws and regulations relating to water protection and conservation
- Weak effluent discharge management systems due to; weak enforcement, disjointed regulations for affluent discharge permit and lack of harmonised framework for implementation of the polluter pay principle
- Uncontrolled water flow alterations through illegal abstractions and the construction of dams and high return flows especially in urban areas which are not sustainable
- Lack of a clear framework for gazettement and repossession of wetlands and other key water ecosystems and inconsistent laws and regulations
- Kenya lacks focus on lakes in its strategies and the existing management of a lake is on a sector-to-sector basis with little coordination
- A complex governance system for lakes and their basins due to siloed sectorial based interventions without mechanism for coordination

3.3.3 Strategic Objectives and Actions

Objective 1: Protect and maintain existing freshwater ecosystems

i) Implement programmes for rehabilitation and restoration of strategic water ecosystems including wetlands, lakes and riparian areas

ii) Review and enforce joint collaborative efforts on prevention of pollution of water resources from point and non-point sources including development of storm water management and reuse framework, and streamline the implementation of the polluter pay principle

iii) Harmonise regulations for water pollution control and roles of various water agencies in water protection and conservation to remove duplicity of functions

iv) Promote community participation and collective action in water resources planning, use and management

v) Integrate water basin plans and mainstream them into the County Integrated Development Plans (CIDPs)

vi) Promote use of economic incentives such as payment for ecosystem services for water protection and catchment conservation

vii) Create awareness among communities, business and decision makers about the value of water including mainstreaming of water protection and conservation in the education curriculum

Objective 2: Promote protection, rehabilitation and restoration of degraded water resources and catchments

i) Map degraded water sources, catchments, riparian areas and water towers

ii) Promote sustainable land use practises of wetlands and riparian lands (including promotion of tree planting activities)

iii) Promote rehabilitation and restoration of riparian and wetlands including review of the process and procedures for their gazettement

iv) Establish safeguard measures for riparian land to protect water Resources through a Multi-Agency approach

v) Harmonise sectorial laws and regulations on protection and conservation of wetlands and riparian areas

vi) Review the priorities for water sector funding and allocation so as to achieve a balance between water conservation and service provision

vii) Promote sustainable livelihood strategies among communities in water catchments

Objective 3: Manage and regulate water use in water catchments and aquifers

i) Review and enforce water use regulations based on water availability, local and national priorities and catchment conditions

ii) Incorporate aquifer management in catchment planning through proactive monitoring, compliance and enforcement

iii) Develop managed aquifer recharge protocols

Objective 4: Promote sustainable management of lakes and their basins

i) Adopt technologies and innovations that will contribute to the sustainable management of the lake basins.
ii) Develop management plans for each lake basin in the country and share the plans with the stakeholders
iii) Develop an integrated system to monitor, prompt rising lake water levels and their impact
iv) Encourage the enforcement of policies that support environmental sustainability e.g. prevention of invasive and alien species

3.4 Availability and Equitable Access to Water for All Kenyans

3.4.1 Status and Context

The Water Act 2016 stipulates equity, sustainability, efficiency and the right to access to water as the key guiding principles for water resources management in Kenya. This is due to the recognition that water access and security are essential for sustainable socio-economic development of the country. While the constitution of Kenya 2010 provides that the access to water is a human right; rising water demands from the key economic sectors (energy, mining and agriculture), increasing urbanisation and industrialisation have placed enormous pressure on the scarce water resources. Consequently, the competition for water has evidently increased both nationally and internationally . The equitable and reasonable water use amongst different sectors is therefore necessary in order to avoid and manage conflicts

In order to promote equitable access, the Kenyan government has established the Water Sector Trust Fund (WSTF) which gives priority to resource allocation in rural and urban areas where access to basic water services is below the national average. Through the fund, the government has implemented a number of water projects that involve rehabilitation and extension of water infrastructure to rural and urban populations that was not previously connected to any water supply system. According to the Medium-Term Plan III for Environment, Water and Sanitation sector, various water supplies projects have been undertaken in many towns across the country to increase water accessibility. Other efforts to promote access to water include support for the development of small community water projects by the national and county governments and sinking of boreholes especially in the arid and semi-arid lands (ASALs).

In response to the need to have a framework for promoting transboundary water resources, the Ministry of Water and Sanitation has developed a draft Transboundary Water Policy. The policy seeks to provide a roadmap for cooperation in attaining sustainable, equitable and reasonable utilisation of the shared water resources that include lakes, rivers and river basins, and aquifers which are shared with countries such as Tanzania, Uganda, South Sudan and Ethiopia. This is against the backdrop of increase in competition water resources both

nationally and internationally. In addition to the draft policy, this strategy has proposed actions to promote cooperation among countries in the management of transboundary water resources.

3.4.2 Challenges and Emerging Issues

While some progress has been made in enhancing access to water by all Kenyans, the following challenges are still outstanding;

i) Many parts of the country are fast approaching a seriously tight situation of water balance
ii) Disproportionate access to water resources and supply of related infrastructure with a sizeable proportion of the population especially in rural areas suffering from water insecurity and assuming the risk of potentially lower quality water
iii) Absence of specific interventions and pro-poor regulations in the current allocation programme, towards addressing matters of social equity on a structured basis at all levels of government
iv) Limited integration of ecosystem management in irrigation and water storage projects
v) Lack of a legislative framework to enforce the constitutional provision that access to water is a fundamental human right
vi) Increased water resources conflicts particularly in water stressed areas
vii) Illegal water abstractions and connections
viii) Lack of technical and human capacity in hydro-diplomacy, international water law, conflict mitigation, negotiation and problem solving through joint dialogue

3.4.3 Strategic Objectives and Actions

Objective 1: Increase per capita water availability

i) Ensure a sustainable water balance through water conservation, managed aquifer recharge and reduction of peak water demand.
ii) Expand and improve the use of alternative water sources, such as water desalination, use of groundwater, rainwater harvesting, storm water and atmospheric water /fog harvesting
iii) Strengthen linkages and coordination among agencies involved in water harvesting and storage
iv) Define and delineate land for recharge of shallow groundwater aquifers
v) Develop regulations and incentives that promote harvesting and storage of rain water in urban and rural areas
vi) Enhance Ministry and Water Resource Authority's representation on County Development Control Committees to support sustainable physical planning and development approvals
vii) Promote harvesting of flash floods through construction of water pans, small dams and other small storage structures focusing on ASALS for livestock, irrigation and to recharge sand dams

Objective 2: Promote water use efficiency

i) Provide economic incentives for water saving technologies (such as toilet replacement programmes and efficient toilet rebates), safe reuse and recycling (4Rs – Reduce, Remove, Reuse, and Recycle)

ii) Review the water pricing model to promote water use efficiency and minimise wastage taking into consideration the value of water, the national priorities, and the social economic condition of the users

iii) Create public awareness on the need to conserve water and change of attitude and behaviour on water use

iv) Develop and enforce regulations for the design of domestic water works and plumbing to minimise wastage

v) Disseminate the use of appropriate sanitation technology (e.g. construction of ecological toilets and laundry sinks, bio digesters, bio-filters, wetlands)

vi) Liaise with relevant authorities to revise the standards for water use equipment

Objective 3: Streamline water allocation systems

i) Undertake studies to determine the environmental flow requirements for all the rivers across the catchments.

ii) Review water allocation and permit issuance guidelines based on water availability and demand, local and national priorities, needs of upstream and downstream users, physical planning and hydrological and hydro-geological assessments

iii) Review and enforce penalties for illegal water abstraction and water allocations and permits to enhance compliance

iv) Develop and maintain an up-to-date database on water allocation and permit issuance

v) Promote community participation and collective action in water resources planning, allocation, use and management

vi) Enhance the technical, financial and human resource capacity to monitor and enforce controls for water allocation and permits.

Objective 4: Enhance strategic water reserves

i) Map the water reserve capacities at the national and county level and determine the levels for strategic water reserves

ii) Develop a strategic water reserve framework for domestic, agricultural and industrial supply at the national, county and local level.

iii) Enhance investments in surface and underground water storage infrastructure for strategic reserves

iv) Integrate catchment and ecosystem management activities into irrigation projects and other water storage investments

v) Create public awareness on need to establish household, community and regional water reserves

Objective 5: Promote cooperation in the management of shared water resources

i) Establish a joint framework for assessment, monitoring, information and knowledge sharing in the management of trans-boundary water resources
ii) Promote sustainable exploitation, utilisation, management and conservation of water resources in adherence to international principles
iii) Development of and adherence to common and harmonised approaches to the prevention and control of pollution of shared water resources
iv) Strengthen the human technical capacity for transboundary water resources, management, and development for regional and international negotiations.

3.5 Water Disaster Management

3.5.1 Status and Context

Water-related natural disasters such as floods, droughts, landslides and pollution of water sources are potential threats to human life, both directly and indirectly. In addition to the human costs, there are also economic losses related to infrastructure, crop and property damage. Kenya has been stricken by various disasters. The most dominant being; droughts, floods and increasingly, water pollution. Kenya's vulnerability to drought is largely due to its dependence on rainfall for its economic and social development. Agriculture, the mainstay of the economy, is almost entirely rain-fed. Water for human consumption and other uses is derived from rivers whose recharge depends on rainfall.

The adversity of water related disasters in Kenya is likely to worsen with climate change which is expected to lead to increased frequency of droughts, floods and other extreme weather events. Efforts to address water related disasters include; establishment of the Water Sector Trust Fund (WSTF) to develop incentive programmes for disaster management, climate change adaptation and mitigation; establishment of National Water Harvesting and Storage Authority (NWHSA) to undertake water emergency interventions during drought and the establishment of Drought Contingency Fund (DCF) under NDMA to cushion lives and livelihoods of communities vulnerable to drought. In addition, there have been efforts to improve dissemination of Early Warning information through media and bulletins.

3.5.2 Challenges and Emerging Issues

While a number of initiatives have been put in place to address water related disasters some challenges still exist. They include,

i) Increased climate variability and extreme weather events
ii) Many actors and uncoordinated and fragmented approach to flood and drought management
iii) Limited capacity for disaster response and risk reduction

3.5.3 Strategic Objectives and Actions

Objective 1: Enhance and strengthen prevention and mitigation mechanisms for floods and water related disasters

i) Promote sustainable management of rain and storm water in urban areas through improved drainage systems, infiltration of storm water, and harvesting, and storage
ii) Promote soil and water conservation practices to diminish runoff, erosion, risks of landslides and flooding and their impacts on the lower catchments.
iii) Enhance enforcement of regulations on riparian areas, wetlands and water infrastructure including removal of construction works and other activities that interrupt water ways.
iv) Promote enforcement of polluter pays principles to help prevent water pollution related disasters
v) Enhance investments in water quality monitoring stations to prevent water pollution related disasters
vi) Increase investment in river training especially for the big rivers

Objective 2: Enhance preparedness and response to water related disasters

i) Map regions/areas with high risk and most vulnerable to water related disasters such as floods, droughts, landslides and water pollution so as to plan for their protection
ii) Develop guidelines for settlements in landslide and flood prone areas taking into account specific catchment conditions.
iii) Enhance water disaster response capacity at national, county and local levels including establishment and operationalising water disaster evacuation centres.
iv) Invest in technical and human capacity for water disaster modelling and early warning systems
v) Enhance dissemination of early warning information for floods, drought, landslides and water pollution to support preparedness, coping, mitigation and response to water related disasters
vi) Formulate and implement emergency plans for rivers with the potential for damages from flooding, and for cities vulnerable to the effects associated with extraordinary amounts of rainfall
vii) Promote a sector wide approach in planning and coordination of water related disaster prevention, mitigation and response
viii) Map all actors in flood and drought management and put them under one coordinated unit

Objective 3: Enhance mechanisms to promote dam safety

i) Review and enhance enforcement of regulations on dam operations during wet and dry seasons, with priority on protecting people and their property and environmental flow.

ii) Develop regulations and guidelines (including standard operating procedures) for monitoring, maintenance, rehabilitation, decommissioning of dams.

iii) Undertake regular and periodic inspection of dams

3.6 Governance of Inter-Basin and Inter-County Water Resources

3.6.1 Status and Context

One of the greatest highlights of the 2010 Constitution is the redefinition of the exercise of state power inter alia through the creation of the system of devolved governance, which largely transformed the Kenyan governance landscape. With devolution came the establishment of two levels of government; National Government and 47 County Governments that are by law distinct though interdependent. Articles 186 and 187 provides for the respective functions and powers of national and County Governments and set out the principles that inform the transfer of functions and powers between the two levels of government. The Fourth Schedule to the Constitution has also assigned specific functions to the National and County Governments.

Although the Fourth Schedule of the 2010 Constitution details the separation of functions to be undertaken by each level of government, there are rising concerns that in the water sector, there is no sufficient demarcation of the boundaries upon which the two levels of government should interact and jointly deliver on some of the functions leading to functional overlaps or duplication. This is largely because the management of the water resources is a concurrent function (which based on Article 186 of the Constitution refers to functions that are allocated by the Constitution to be performed by both levels of government) and can therefore be subject to many jurisdictional overlaps. In addition, while the Constitution demands that the two levels of government must carry out their affairs in a cooperative manner; a framework for intergovernmental cooperation in the water sector has not been established. Consequently, there are some cases where the need for functional separateness has not been respected, resulting in unnecessary conflicts between the two levels of government.

The absence of a framework for intergovernmental cooperation means there are very few institutional bridges, practices, or processes that incentive's building and sustaining the necessary linkages for delivery of functions. For instance, the Water protection and securing residual water is carried out by the National Government through Regional Development Authorities. But interactions between the counties and the RDA's currently happens on an ad hoc basis without a framework for intergovernmental cooperation between the County Governments and the regional bodies in the areas of project identification, implementation and management.

Since water as a bio physical resource transcends across many administrative boundaries implies that there is potential for conflict among counties with regard to sharing of water resource management costs and benefits. Following devolution, the water sector governance

structure has a number of emerging issues that need to be addressed in order to have an enabling environment for sound management of the country's water resources. The implication is that there should be strong coordination mechanisms for catchment management for basins which cut across several counties as well as facilitating counties to work with other counties and national government agencies on water resources management issues.

Kenya has subscribed to the Integrated Water Resource Management (IWRM). One of the key principles of IWRM is the recognition of water basins as the main units of governance for WRM. This implies the need for decentralised water resource management. The IWRM principle is recognised in the Water Act (2016) through the transfer of responsibilities for WRM to units at Basin and Sub-Basin Level. These include the Basin Water Resource Committees (BWRCs), County Governments and WRUAs. Accordingly, WRUAs have the objective to promote controlled and legal water use activities; good management practices that make efficient and sustainable use of water resources; the safeguarding of environmental flows for downstream ecological demands and basic human needs; the reduction of water use conflicts; and catchment conservation measures to improve water quantity and quality. However, WRUAs face a number of challenges including, poor governance and weak representation to include women, youth and marginalised groups, poor linkages between WRUAs and other key stakeholders, elite capture, inequitable sharing of benefits and multiple accountabilities

3.6.2 Challenges and Emerging Issues

i) The absence of sufficient clarity on the functional boundaries for each level of government with clearly defined roles and responsibilities for each level in relation to the concurrent functions
ii) Allegations that State Corporations, which are largely National Government institutions such as the Regional Development Authorities (RDAs), are still performing functions that are by law assigned to County Governments.
iii) The need for functional separateness not being respected in some cases resulting in unnecessary conflicts between the two levels of government
iv) The inequitable allocation of resources for the performance of functions between the two levels of government
v) Absence of a framework for governance and management of inter-basin and inter-county water resources
vi) Lack of a common understanding on water balance, sustainable water abstraction limits and water use priorities between and across basins and counties
vii) Absence of an intergovernmental relations mechanism for addressing conflicts in the water sector
viii) Poor governance and weak representation in WRUAs

3.6.3 Strategic Objectives and Actions

Objective 1: Promote fair and equitable utilisation of water resources and benefit sharing

i) Promote a common understanding on water balance, sustainable water abstraction limits and water use priorities between and across basins and counties

ii) Promote the establishment of common water intakes to enhance monitoring, regulate water flow and mitigate conflicts

iii) Develop a framework for sharing of costs and benefits with regard to inter basin and inter county water transfers taking into account the costs of catchment management and the needs of upstream and downstream users

iv) Develop a framework to Promote joint water catchment management between counties including basin-wide water resources management plans

v) Promote effective conflict management mechanisms with regard to governance and management of inter-basin and inter-county water resources including the establishment of joint technical inter-governmental committees

Objective 2: Promote cooperation in the management of inter-basin and inter-county water resources

i) Enhance understanding of the constitutional and legal provisions governing water resources shared across counties

ii) Introducing greater clarity and accountability into the roles and responsibilities of the national and County Governments.

iii) Create multi-agency to review existing laws to allow enforcement framework on water Resources between the two levels of Government

iv) Restructure the governance structure of the RDAs to include representation by County Governments from the regions where they operate

v) Promote awareness about the roles of national government, county governments and different water sector agencies with regard to the management of inter basin and inter-county water resources

vi) Develop a framework for collaboration and engagement in the management of inter-basin and inter-county water resources

vii) Harmonise the legal and regulatory framework on regulation and management resources to promote synergies and reduce conflicts between Counties and National Government.

Objective 3: Enhance stakeholder participation in management of inter-basin, intra-basin and inter-county water resources

i) Enhance awareness on the relevant water rights and obligations among water users and communities

ii) Promote stakeholder participation in water resources planning, allocation and benefit sharing

iii) Mainstream gender issues in management of inter-basin, intra-basin and inter-county water resources

Objective 4: Strengthen the role of WRUAs and communities in water management and catchment conservation

i) Development a framework to improve the governance of WRUAs and communities based on their current challenges, the need for adequate representation and inclusivity of women and youth.
ii) Enhance the technical capacity of WRUAs and communities to discharge their functions including water conflict resolution, writing proposals and fundraising.
iii) Review and update the sub-catchment water management plans to align them with devolution and emerging challenges and opportunities.
iv) Provide funding to support implementation of sub-catchment water management plans
v) Develop a mechanism to support collaboration of WRUAs with other community associations (e.g. community forest associations)
vi) Provide for standardisation of WRUA fees for abstraction of water through the water resources rules

3.7 Water Resources Regulation, Planning and Financing

3.7.1 Status and Context

The legal, policy, and institutional framework that governs the water sector in Kenya is anchored in the Constitution of Kenya (2010), Water Act (2016) and other laws and regulation. This framework recognises the role of both the National and County Governments in the policy formulation, regulation and management of the national water resources. The sector is supported by various national, regional and local agencies who perform the functions of regulation, arbitration of conflicts, funding, service provision and water infrastructure development. Other than government agencies involved in water resources management, other players in the water sector include; government regulatory agencies, state enterprises, bilateral and multilateral agencies and Non-State Actors, Regional Development Authorities, Research and training institutions and the private sector.

Given the complexity of the water sector governance structure, there have been efforts to reform the sector to align it to the Constitution, address emerging issues and consolidate the gains made. The water reforms in the Water Act, 2016 sought to decentralise water services and separate water policy formulation from regulation and services provision. In spite of these efforts, the water sector governance structure has a number of emerging issues that need to be addressed in order to have an enabling environment for sound management of the country's water resources. The institutional set-up created by the Water Act (2016) has multiple institutions at different levels and with different roles and mandates. This gives rise to the need for strong horizontal collaboration and coordination mechanisms;

- Among water agencies within the Water Ministry
- Among water agencies and other state agencies with water-related functions
- All water agencies and private sector

The current system is based on siloed sectorial approaches which often leads to lack of holistic planning, delayed implementation of programmes and low impact.

The nature of interactions and relationships among water stakeholders requires a long-term and multi-sectorial approach in order to achieve the country`s desired outcomes of prudent management of water resources. Such planning requires that the process is institutionalised, comprehensive, participative, inclusive and adaptive to changing economic and social requirements of the nation. In addition, the planning should take into account; competing uses of water, many agencies with different roles, socio economic status of the country and rising water demand. The National Water Master Plan (NWMP) 2030 is a prime example of the country`s progress towards coordinated long term planning in the water sector. The NWMP presents a comprehensive approach to water resources development and management consistent with the country's social and economic development activities. The NWMP 2030 aligns water sector planning with Kenya Vision 2030 so as to promote coherence in water sector planning and the country`s long term development planning.

The execution of water plans and strategies requires sustainable financing mechanisms. This is particularly important in the context of the country facing competing financing needs against a stringent budgetary allocation. Vision 2030 recognises the role of public-private partnerships (PPPs) in enhancing efficiency in water & sanitation delivery and resource mobilisation. This strategy recognises that Kenya's water sector provides immense opportunities but faces diverse challenges. Through PPPs, there is potential for the water sector to be assisted to introduce new technologies and innovations, expand infrastructure and plug financing and revenue gaps.

3.7.2 Challenges and Emerging Issues

i) Lack of joint and holistic planning and framework for collaboration and building of synergy between national and county government,
ii) Lack of a mechanism to strengthen horizontal collaboration among water agencies, other state agencies with water-related functions and the private sector
iii) Overlapping mandates among water and environment state agencies
iv) Limited capacity of water agencies to enforce existing water laws and regulations
v) Low integration of water planning in national and county development planning
vi) Weak collaboration and coordination at all levels of government in the planning and implementation of water infrastructure projects

vii) Weak monitoring of existing water plans and strategies
viii) Inadequate funding coupled with diminishing public funding

3.7.3 Strategic Objectives and Actions

Objective 1: Enhance coordination and collaboration among water sector agencies for sustainable water resource management

i) Develop a formal framework for enhancing horizontal collaboration among water sector agencies targeting all the national and regional water agencies
ii) Create an inter sectorial forum for collaboration among all water sector agencies (water agencies, state agencies outside the water ministry, non-state agencies and private sector) to promote synergy and minimise gaps and duplication of roles taking into account existing laws and devolution
iii) Review existing legal and regulatory frameworks for water resources in view of devolution and emerging issues

Objective 2: To promote implementation and enforcement of existing laws and regulations for water resources

i) Strengthen the capacity of water agencies to enforce water laws and regulations
ii) Develop mechanisms for implementation of laws and regulations where there are overlapping mandates among water and environment state agencies
iii) Establish a multi-agency to review existing laws to and develop an enforcement framework on Water Resources between the two levels of government
iv) Strengthen joint fora and initiatives for better service delivery (between the national and county governments and also among various water sector agencies and government units)

Objective 3: Adopt an integrated and holistic approach to water sector planning and management

i) Consolidate and integrate investment planning for water and sanitation, with development planning and budget processes at national and county levels
ii) Make the planning of water resources projects interdisciplinary with all environmental, ecological and human concerns internalised
iii) Adopt a long-term view water sector planning e.g. based on Vision 2030 and delink water planning from the political cycle
iv) Strengthen Stakeholder Participation in water planning and incorporate measures to involve especially disadvantaged groups
v) Strengthen monitoring and evaluation of water strategies and plans
vi) Extend the country`s water national master plan to cover the local and county level

Objective 4: Promote sustainable financing models for water resources management

i) Identify new financing mechanisms and funding sources including Public Private Partnerships and payment for ecosystem services (PES)
ii) Provide incentives to promote private sector participation in the water sector.
iii) Promote accountability systems in the utilisation of water sector finances.
iv) Develop a model for the pricing of water resources that integrates critical costs such as catchment management and rehabilitation, socio-economic conditions of the users
v) Provide mechanisms for sustainable financing of WRUAs
vi) Develop provisions requiring that at least 5% of project budgets (funds) for water infrastructure is utilised for catchment management.

Objective 5: Enhance private participation in water sector

i) Undertake an inventory of existing PPPs in the water sector
ii) Review procedures for integration of PPPs in the water minimise lead time, reduce bureaucracy and enhance efficiency
iii) Promote incentives to encourage private sector participation in water resource management, sanitation and financing

3.8 Research, Innovation, Education and Capacity Building

3.8.1 Status and Context

Research and innovation are important for strengthening water security against a backdrop of increasing demand, water scarcity, growing hydrological uncertainty, aggravating fragility and greater extremes and fragmentation challenges. The complexity of water challenges in a rapidly changing world means that new, locally-adapted and innovative solutions are often required. In addition, the development of skills and institutional strengthening is still a priority considering the need to explore innovative technologies for enhancing productivity, conserving and protecting resources, recycling storm water and wastewater, and developing non-conventional water sources in addition to seeking opportunities for enhanced water storage, including aquifer recharge and recovery.

The importance of the institutional capacity for water research and technological development is recognised in article 10 of the Water Act 2016. However, while the urgent need for innovation to address the multifaceted and intertwined water-related challenges is acknowledged and becoming increasingly clear, the water sector in Kenya has been comparatively less innovative than other sectors of the economy. In formulating this new strategy, the government recognises that water innovations are not only applicable to new technologies but also to new partnerships. The scope extends across public and private agencies, research and industry, new business models and new forms of water governance that are not only innovative themselves but can also stimulate and support technological innovations. This strategy (NWRS, 2020-2025) also recognises the importance of government investment in promoting innovation and growth.

In Kenya, research, innovation and capacity building in the water sector is done by many different organisations including higher education institutions, non-governmental organisations and international organisations. Despite ongoing research on water issues and the presence of a research and innovation framework, water research and innovation in Kenya happens in silos. Thus, the contribution of research, technological development, and human resources capacity building still falls short of its maximum potential and does not meet the sector's needs. Further, while there are many educational institutions offering water courses at tertiary and higher levels, the current capacity development is not well linked with sector needs, and there is need for continuous labour market surveys to ascertain the suitability of the training. Thus, there is need to develop capacity and skills to address all elements of water resources functions (protection, development, conservation, management and control). Taking into account the challenges facing the water sector in Kenya, enhanced investments in research, technology and innovation will play a key role in delivery of the policy requirements and actions necessary to develop a sustainable water system.

3.8.2 Challenges and Emerging Issues

While there is an institutional framework for research and innovation in Kenya, the following challenges have been observed:

i) Lack of alignment of water research objectives and programmes with the broader national policies and strategies relating to water resources management and water use
ii) Limited participation of sector-wide stakeholders in the setting and execution of the water-related research and innovation agenda for the country
iii) Low adoption of research and development, technology and innovation in decision making for the development of the water sector
iv) Limited dissemination and utilisation of water research for decision making; including limited access to, and the sharing of data.
v) There are many actors conducting water research but there is no inventory of the research conducted to inform decision making
vi) There is lack of a coordinated mechanism for the planning, delivery and quality assurance of water-related capacity building, training and skills development programmes within the sector
vii) There is inadequate support to technological innovation with respect to incentives, development of institutional capacities, enforcement of intellectual property rights, financing and other facilitation
viii) Low public awareness on water resources management, harvesting and storage
ix) Inadequate budgetary allocations for water sector education, training, research and innovation

3.8.3 Strategic Objectives and Actions

Objective 1: Promote appropriate basic and applied research and innovation in the water sector

i) Map the various opportunities for water innovations (including sustainable technologies for enhancing productivity, conserving and protecting resources, recycling storm water and wastewater, development of non-conventional water sources, water storage for environmental flow management and aquifer recharge and recovery) and encourage their development

ii) Develop structured mechanisms of technological innovations with incentives to the private sector and frameworks for economic returns

iii) Establish a water resources innovation fund to help foster innovations in the water sector

Objective 2: Promote investments to spur successful innovations in the water sector

i) Map the various opportunities for water innovations (including sustainable technologies for enhancing productivity, conserving and protecting resources, recycling storm water and wastewater, development of non-conventional water sources, water storage for environmental flow management and aquifer recharge and recovery) and encourage their development

ii) Develop structured mechanisms of technological innovations with incentives to the private sector and frameworks for economic returns

iii) Establish a water resources innovation fund to help foster innovations in the water sector

Objective 3: Enhance dissemination and utilisation of water research outputs for improved water resource management

i) Establish an integrated information system on water resources that is able to meet the information needs of all water stakeholders.

ii) Mainstream the utilisation of water research outputs to support decision making, efficiency and effectiveness

Objective 4: Promote relevant education and capacity building in the water sector

i) Assess the human capacity needs of the water sector, and review and/or develop relevant curriculum for professional and technical training, and professional certification

ii) Review the mandate of the Kenya Water Institute to make it more responsive to the needs of the water sector.

iii) Enhance public awareness on water resources management, harvesting and storage, water and sanitation services to encourage sustainable water use practices.

Objective 5: Promote sustainable financing mechanisms for water sector research, innovation, education and capacity development

i) Promote structured arrangements with private sector, Non-State Actors, and other development partners to provide finance for water sector research and development
ii) Support and provide incentives for commercialisation of water research and innovation outputs
iii) Integrate water research, innovation, education and training resource needs into the national and County budgets

3.9 Cross Cutting Issues: Mainstreaming of Climate Change and Gender in the Sector

3.9.1 Status and Context

Climate change impacts on water in Kenya could exacerbate existing water-related challenges and create new ones related to climate variability, extreme weather events and changing rainfall seasonality. This would affect a wide range of economic sectors and livelihoods and impact on the development of infrastructure into the future, including through water quality-related issues. Projected impacts are due to changes in rainfall and evaporation rates, further influenced by climate drivers such as wind speed and air temperature as well as soils, geology, land cover and topography across Kenyan water catchments. Hydrological modelling is also essential for translating these complex interactions into potential water resource impacts.

On gender mainstreaming, the Constitution and other laws and policies emphasize the need for gender equality in all sectors of the economy. The Ministry of Water and Sanitation has in the past initiated a number of gender mainstreaming programmes under Water and Sanitation Programme (WSP) to ensure capacity-building and gender integration and awareness in the sector. These programmes have sought to ensure;

- Rapid and accelerated increase in women's access to water by removing the requirement of title deeds as collateral for a water connection, reducing the connection fee, and introducing amortisation arrangements for meter repayment
- Increased participation by women in planning for services, and in accessing paid work in water and sanitation infrastructure development initiatives.

While the untapped potential of women and girls is gaining greater attention in Kenya, there is need to fast track gender mainstreaming to ensure that women and marginalised groups including youth and people with disabilities are fully involved in water resources management

3.9.2 Challenges and Emerging Issues

i) Climate change has led to more frequent and intense extreme weather events such as drought, floods, strong winds, hailstorms, and frosts which will exacerbate water disasters.

ii) Key pressures on freshwater ecosystems, expected to be exacerbated by climate change include: over-abstraction of water; water quality problems; habitat destruction especially from the degradation of riparian zones.
iii) Need for linking social and gender aspects with ecological, technical and economic dimensions of water resources management
iv) Need to enhance gender equity in the management, control and use of water resources

3.9.3 Strategic Objectives and Actions

Objective 1: Mainstream climate change into water resources regulation, monitoring, protection, conservation and management of water resources

i) Develop a view of the climate change trends and projections in Kenya including key climate change impacts and potential response options for the water sector
ii) Develop water sector adaptation scenarios for future climate conditions using the information, data and models from the climate change trends and projections
iii) Develop and implement strategies for early warning and response, and ensure preparedness for extreme water related weather events
iv) Plan and develop water infrastructure with operational flexibility to perform under different future climate conditions
v) Strengthen the institutional framework within the water sector agencies to mainstream climate change into the water sector
vi) Enhance the capacity of the water sector agencies to attract and absorb domestic and international climate change financing

Objective 2: Mainstream gender and integrate youth and the marginalised in regulation, monitoring, protection, conservation and management of water resources

i) Develop a framework for linking social and gender aspects with ecological, technical and economic dimensions of water resources management
ii) Enhance gender equity in the management, control and use of water resources
iii) Enhance human and institutional capacity to mainstream gender in water and sanitation
iv) Promote resource mobilisation for gender mainstreaming in water resources
v) Integrate youth and marginalised groups including people with disabilities in the management of water resources

Chapter Four: Implementation and Monitoring and Evaluation Framework

4.1 Introduction

The implementation of the past National Water Resource Strategies provides important lessons that must be taken into account in the implementation of the NWRS (2020-2025). A lack of an effective framework for coordination and harmonisation of the stakeholder roles and activities was one of the major impediments to effective implementation of the past strategies. This led to limited engagement of the private sector and participation of communities in the implementation of the planned activities. Information gaps and asymmetries arising from a lack of a clear communication and reporting mechanism among the stakeholders and to the general public also hampered the implementation of the policies. As such, the need for precise, accurate and up-to-date information is key for accountability of the status of implementation. Such information would also be useful for providing information that may guide timely decision-making in the water sector.

Funding gaps arising from diminishing allocation from the national government in past meant that some envisaged strategic actions could not be implemented. Therefore, there is need to address these constraints through expanded sources of incomes and also prudence in the use of existing financial resources. The presence of capacity gaps in terms of human resources, expertise and infrastructure must also be addressed if future implementation is to be effective. The lack of an effective Monitoring and Evaluation (M&E) framework made it difficult for the policy maker to effectively track progress of implementation and also conduct an evaluation that would provide feedback for future change of strategy. In addition, this process would help the implementers adopt the strategy to the changing policy, legal, regulatory, social and economic conditions in the country. Going forward therefore, it's important that capacity (human resource, technical and financial) for an effective M&E is put in place to ensure timely monitoring of the progress of implementation and also evaluation of the strategy outcomes. The framework should be backed up by a mechanism of data and information sharing across the stakeholders in the sector.

The realisation of the objectives of the NWRS (2020-2025) strategy will therefore depend on the joint effort and collaboration of various sectors and stakeholders including, relevant national government ministries, water agencies, county governments, donors, Non-State Actors and the Private Sector. These actors will need to mainstream this strategy into their policy planning and budget making processes to ensure harmony between the NWRS and the broader socio-economic agenda of the country. In addition, implementation of this strategy

will need to be coordinated to avoid overlaps and to create synergy in pursuit of effective strategy implementation. Further, a proper monitoring and evaluation system is necessary to ensure that the actions outlined in the strategy are being executed and that resources are being allocated are used effectively and where necessary, the strategy is adapted to evolving needs and conditions of the sector.

4.2 Coordination Mechanism for Implementation of the Strategy

The implementation of the NWRS will require a clear implementation unit that will draw its membership from various stakeholders in the sector. To achieve this, an Intergovernmental Forum for Water, Environment and Natural Resources is proposed as shown in Figure 4.1.

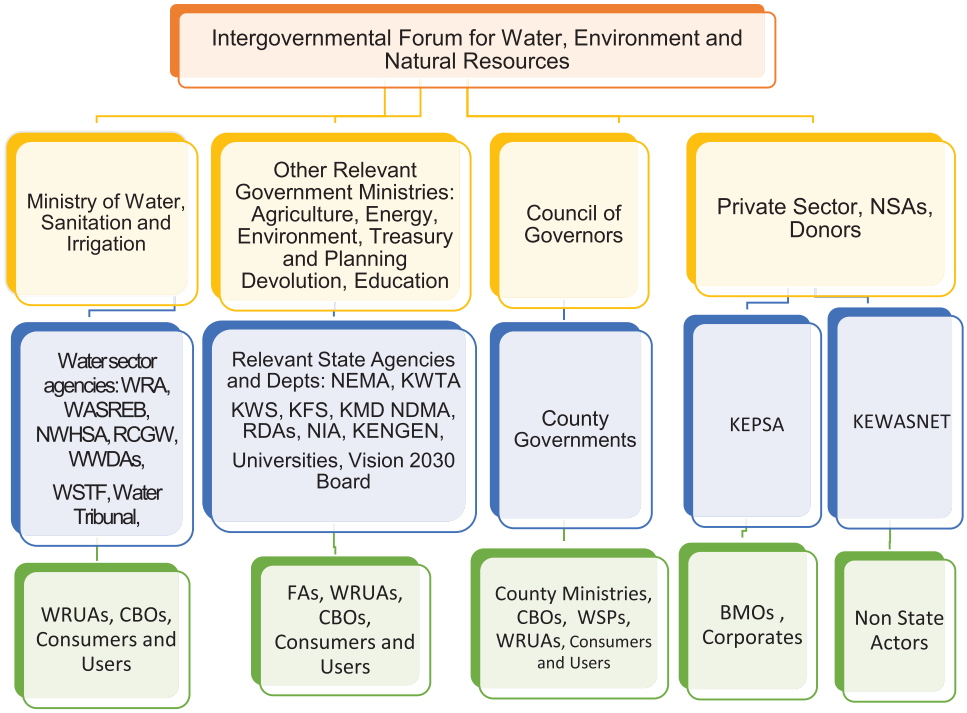

Figure 4.1: Intergovernmental Forum for Water, Environment and Natural Resources

The Intergovernmental Forum for Water, Environment and Natural Resources will be responsible for the coordination, harmonisation and liaison between national government, county governments and other stakeholders. This forum may be constituted and led by the accounting officers of the relevant national government ministries (Principal Secretaries) and supported by other relevant actors. The Forum will seek foster cooperation and synergy among different water sector actors. The National Government through the Ministry of Water, Sanitation and Irrigation (MWSI) and the Water sector agencies will be primarily responsible for the providing the necessary policy, legal, institutional and infrastructural framework necessary for the implementation, monitoring and evaluation of the strategy. Other relevant national government ministries will provide the relevant coordination, support and implementation of the strategic actions under their mandate.

The implementation plan recognises the role of County governments in catchment management and water service provision as per the Constitution. Therefore, the CGs will be instrumental in the implementation of the aspects of the strategy that are relevant in their areas of jurisdiction. In all instances, joint cooperation and synergy between counties will be required since some of these catchments transcend county administrative boundaries. Each county will thus cascade the NWRS policies, strategies and plans to guide implementation and also integrate County specific strategies into the respective County Integrated Development Plans (CIDPs).

The private sector is expected to play a prime role in the implementation of strategy. The sector will be required to complement government funding, promote waste water treatment and recycling, support sustainable development of ground water resources and increase water harvesting and storage. The creation of incentives and effective engagement structures will ensure that the private sector investment in the water sector is scaled up and also aligned to the priorities of the NWRS. The private sector can also engage in government in advocacy on law and policy issues of the strategy and also promote action-based best practices in conservation and protection and prudent use of Kenya's natural resources. Also, through Corporate Social Responsibility (CSR), the private sector can support programmes that promote water accessibility and availability so as increase the quality of life of the citizens.

The role of Non-State Actors (NSAs) will complement government initiatives by building capacity, influencing policy, sector coordination and networking in the sector. The role of Non-State Actors and donors will also be an integral part of the implementation plan since these organisations often partner with government in providing financial resources also and implementing various water and sanitation development projects at the local and national level.

4.3 Implementation Framework

The implementation of the NWRS will be based on the identified thematic areas of interest. To realise the programme of action, the strategies and their desired outcomes have been designated to the relevant sectors and stakeholders. Subsequently, they have been linked to the five-year time frame. The implementation framework will be translated into annual work plans so that each ministry, water agency or actor should subsequently derive their annual plan from the implementation framework. What needs to be underscored is the fact that, it is not the formulation of plans that creates impact. It is the dedicated implementation and commitment to the ideals and principles undergirding the plans that bring results. The earnest hope is to have commitment manifested with this national strategy. A detailed implementation matrix showing the thematic area, strategic objectives, outcomes, roles of different actors and the time frame is presented in Table A1 in the Annex.

4.4 Monitoring and Evaluation Framework

For successful implementation of the NWRS, a coherent, transparent and independent monitoring and evaluation framework will be developed to ensure the strategy`s objectives are achieved in a cost effective, coordinated and harmonised approach at both the national and county levels. The ministry responsible for water in collaboration with the county governments, relevant implementing ministries, departments and agencies, private sector and other stakeholders will coordinate the implementation of an effective M&E framework. An indicative framework will include monitoring and reporting requirements, evaluation mechanism and communication strategy.

The monitoring mechanism will be established to continuously track progress being made by systematically collecting information on the achievement of the strategic objectives using the stated key indicators of each of the strategic actions. The information collected will include; strategic activities, plans, finances and progress. The monitoring report will capture among other things: progress made against the strategy; causes of any discrepancy/deviation; emerging challenges that may adversely affect implementation of the strategy; and possible solutions to these challenges. Reporting of the progress of implementation will be done both quarterly and annually. At the end of the strategy period, a final report on the progress of implementation will be necessary for evaluation.

Evaluation of the strategy will involve a systematic and objective process of examining the relevance, effectiveness, efficiency, impact and sustainability of the suggested strategic objectives and actions. The process will involve three major evaluations namely; mid-term evaluation end-term evaluation. In the implementation of the M&E framework, the tools of analysis will include; implementation matrix review, performance contracts and work plans; budget and expenditure review, research and development reports, consultative for a and staff performance appraisals.

4.5 Risk Management Framework

The government recognises that risk management is an important part of the implementation of this strategy. Understanding the elements of risk within a context of a wide variety of influences including the impact of technology, shifts in competition from unusual sources, and rapidly shifting governmental/regulatory environment is important for the effective implementation of the strategy. This strategy identifies that multiple types of risks inherent in its implementation:

- **Political and governance:** Risks associated with political uncertainties including changes in policies and political systems or political unrest
- **Legislative/Legal:** Those associated with current or potential changes in national or regional and international laws and treaties

- **Economic/Financial:** Those affecting ability to meet financial commitments. For example, internal budgetary pressures,
- **Technological:** Those associated with the capacity of the key implementing agencies to deal with the pace / scale of technological change or their ability to use technology to address changing demands.
- **Macro dynamics:** Those affecting the competitiveness of the economy (in terms of macroeconomic variables such prices, inflation, interests' rates, exchange rates, cost of production or quality)
- **Social:** Those related to the effects of changes in demographic, residential or socio-economic trends on the ability of the water sector to deliver on its objectives.
- **Ecosystem risk and climate change:** Those beyond current institutional experiences, capability, and resources or underestimated complexities or unidentified impacts
- **External influence:** Those related to actions /inactions of other countries especially with regard to the management of transboundary water resources

In order to achieve effective management of risks, this strategy has adopted an integrated Risk Management Framework (figure 4.2) with various actions whose implementation will achieve three mutually supportive goals:

- Prevent the creation of new risk by adopting risk-informed actions, strategies and development pathways that minimise increase in exposure and vulnerability.
- Reduce existing risk through action that addresses and reduces exposure and vulnerability, including preparedness for disaster response.
- Strengthen resilience by social and economic measures that enable national and county governments and other stakeholders to absorb loss, minimise impact and recover

Figure 4.2: Risk Management Framework for NWRS

The adopted framework is complemented by the following guiding principles:

a) The prevention of new risk creation and reduction of existing risk are essential components of governance

b) Sustainable development depends on the ability to prevent new risk creation and the reduction of existing risk

c) Sound prevention and reduction of disaster risk are based on risk-informed decision-making

d) Preventing new risk creation and reducing existing risk require social engagement and empowerment, equality, inclusion and non-discriminatory participation and assumption of responsibility by all stakeholders

e) While the causes and consequences of risk may be national, transboundary or global, disaster risks have local characteristics and their management requires the empowerment of local communities

f) Preventing new risks of disaster, and reducing those existing, constitute an international legal duty

g) Aligned and clear responsibilities and action across public institutions and private sector

h) In the planning and implementation of disaster risk management, the differential capacities of counties, basins and communities need to be duly considered.

4.6 Communication Mechanisms for the NWRS

A key thrust of the NWRS is to maximise sector-wide stakeholder participation in the implementation of the strategy. It is essential that the NWRS is brought the attention of every citizen of Kenya. Ownership of the NWRS by all water users is a critical success factor, which recognises that given the diverse nature of users, a one-size fits- all approach to communication is not possible. Innovative, cost-effective and targeted communication activities, built upon lessons learnt from the approach adopted during the development of the Strategy and weaknesses in the implementation of the previous NWRS are envisaged.

The communication framework is aimed at catalysing and strengthening implementation planning and, subsequently, operationalising the NWRS Implementation Plans. A dedicated communication and stakeholder engagement focus will be maintained throughout the lifespan of the strategy, aimed at enhancing commitment and co-ordination and promoting knowledge sharing to optimise progress and leverage synergies during implementation.

A mix of media and electronic communication, sector-specific working sessions, and existing and targeted engagements with prioritised stakeholders will be utilised. Communication forms such as online knowledge platforms can have a strong distribution information network where the stakeholders can easily gain access to the information and also have it distributed fairly quickly at a low cost. Also, direct public campaigns and reader friendly communication materials in all official languages will be prepared to facilitate water user engagement with the NWRS.

4.7 Resource Mobilisation

The success of implementation of the strategy will require adequate financing of the proposed strategic actions. To realise this, various funding strategies may be pursued. The government through national treasury will finance the programmes through taxes, grants and bonds. However, given the constraints faced by the exchequer, complementary funding channels will be needed. The sector may use internal sources to raise revenue through improved water resource revenue and fees. The Water Sector Trust Fund may also be revamped to ensure that they attract funding from external sources.

Donor funding will also be critical in financing some of the projects. This will entail development of proposals indicating the rationale of various programmes, benefits, costs and their sustainability. Lastly, public-private partnership may be used raised funds. In this model, private partners can be incorporated into the proposed water programme through a well-established framework which will govern the partnership between the government and private entities. The governing framework will also define the period and the means through which the private investors recoup their investment.

4.8. Sector Investment Plan

The Ministry of Water and Sanitation Strategic plan (2018/2022) proposes a budget of Ksh 33.6B for the Management, protection and Conservation of Water resources. Due to the fact that different sectors are critical to the implementation and success of this strategy and the aspect of incorporating an effective Monitoring and Evaluation unit , there is need to increase budget allocation in the Sector Investment and Financing Plan to be developed by the Ministry.

The implementation of the Strategy will therefore require Kshs 68,760.00 million. The projected resource requirement for implementation is shown in table 4.1 below.

Table :4.1 Financial Requirements of the NWRS

		Estimates in Kshs Millions					
Key Result Area	**Themes Covered**	**2020/21**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**Total for 2020-2025**
Policy ,Legal and Institutional Framework	Governance of inter-basin and inter-county water resources ;Water Resources regulation, planning and financing	520.00	570.00	590.00	630.00	700.00	3,010.00
Water protection and conservation	Water protection and conservation :Availability and equitable access to water for all ;Water resource monitoring and assessment	7,000.00	7,800.00	8,100.00	8,300.00	8,600.00	39,800.00
Water disaster management	Water disaster management	4,000.00	4,200.00	4,500.00	4,800.00	5,000.00	22,500.00
Research ,technology and cross cutting issues	Research ,innovation, education and training; Mainstreaming of climate change and gender in the sector	400.00	650.00	750.00	800.00	850.00	3,450.00
Total		11,920.00	13,220.00	13,940.00	14,530.00	15,150.00	68,760.00

Annex , Table A1: Implementation Matrix for NWRS (2020-2025

Theme	Strategic Objective	Measures of achievement	Implementing Agency			Time frame
			National Government	County Government	Other stakeholders	
Theme 1: Water resource monitoring and assessments	Enhance the mapping and assessment of all water resources	No of surface and ground water resources mapped and delineated; Water resources classified according to prescribed criteria; Potential and yield for catchment water resources estimated; Minimum water reserves determined at all levels; Flash flood monitoring and quantification of the in ASALS undertaken : No of regular water assessments undertaken	MWSI: WRA: NLC; NEMA: DRSRS: KMD: WASREB; RCGW; WSTF; WWDAs; NWHSA	County Government – WR CEC	Universities RCMRD WRUAs	3 years
	Strengthen and enhance the water resource monitoring	Water information needs across all the catchments and for various users determined; Number of water resource monitoring networks across all water catchments modernised; Reference points that are representative of the rainfall regime, stream flow characteristics, surface water and ground water quality status established; water Resource Quality Objectives (RQOs) for the various categories of water resources developed and implemented; Technology for water resource assessment improved; No of regulations and guidelines for water resource assessments and monitoring developed; Guidelines and operational plans for monitoring water resources developed; Involvement of WRUAs enhanced	MWSI: WRA: WSTF; NEMA: DRSRS: KMD: KWS: KFS KWTA: KEFRI: WASREB; WWDAs; RCGW, NWHSA	County Government - WR CEC	Development Partners, Universities RCMRD WRUAs	3 years
	Enhance the capacity for water resource assessment and monitoring	Relevant current and future technical and human resource capacity needs established; No of personnel trained on water resource monitoring and assessments; Water resources assessment and monitoring capacity gaps addressed; Certification system for water assessment and monitoring established; Referral water laboratory set up	MWSI: WRA: KEWI; NLC: NEMA: DRSRS: KMD WASREB; WWDAs; NWHSA, RCGW	County Government - WR CEC	Development Partners, Non-State Actors and Private Sector	3 years
	Develop an integrated system for	Mechanisms and frameworks for data and information sharing developed; No of state agencies and stakeholders sharing water data and information; Integrated information system on water	MWSI: WRA KEWI: NLC:	County Government	Development Partners, NSAs and	1-5 years

Theme	Strategic Objective	Measures of achievement	Implementing Agency			Time frame
			National Government	County Government	Other stakeholders	
	monitoring and sharing of water data and information for decision making	resources established; Water resources atlas and spatial water availability map developed; Regulations and collaborations for sharing and utilisation of water data developed and institutionalised;	NEMA: KMD DRSRS: : WASREB; WWDAs; NWHSA, RCGW		Private Sector	
Theme 2: Water protection and Conservation	Protect and maintain existing freshwater ecosystems	No of programmes for rehabilitation and restoration of strategic water ecosystems implemented; Efforts on prevention of pollution water resources reviewed; community participation and collective action in water resources planning, use and management promoted; Regulations for water pollution control harmonised; Water sub-catchment management plans (SCMPs) integrated and mainstreamed into the county integrated development plans (CIDPs); Use of economic incentives for water protection and catchment conservation promoted.	MWSI: WRA NEMA: DRSRS KMD: KWS KFS: KWTA: KEFRI: WASREB; RDAs; WWDAs;	County Government ; Council of Governors	Other government ministries; WRUAs; Donors, NSAs and Private Sector	3 years
	Promote Protection, rehabilitation and restoration of degraded water resources and catchments	Degraded water sources, catchments and water towers mapped; No of environmental conservation programmes implemented in water catchment areas; Proportion increase in sustainable land management practices in the country Proportion of country's riparian and wetlands rehabilitated and conserved; sectorial laws and regulations on protection and conservation of wetlands and riparian areas harmonised, framework for classifying incentives for trade and effluent discharges developed	MWSI: WRA NEMA: DRSRS KMD: KWS KFS: KWTA: KEFRI: WASREB: WWDAs; RDAs	County Government ; Council of Governors	Other government ministries; WRUAs; Donors, NSAs and Private Sector	3 years
	Manage and regulate water use in water catchments and aquifers	No of water use regulations based on water availability, local and national priorities and catchment conditions reviewed and enforced, managed aquifer recharge protocols developed Collaboration between management entities with relevant national and county government departments established	MWSI: WRA: KWS KEFRI: KFS: NEMA; WWDAs	County Government ; Council of Governors	Other government ministries; WRUAs;	1 year
	promote sustainable management of	No of technologies and innovations for sustainable management of lakes implemented; management plans for lakes developed and shared with stakeholders; regulations and policies on management of lakes implemented	MWSI: WRA: KWS KEFRI: KFS:	County Government ; Council of Governors	Other government ministries; WRUAs;	5 years

Theme	Strategic Objective	Measures of achievement	Implementing Agency			Time frame
			National Government	County Government	Other stakeholders	
	lakes and their basins		NEMA; WWDAs			
Theme 3: Availability and equitable access to water for all Kenyans	Increase per capita water availability	Level of sustainable water balance through water conservation, managed aquifer recharge and reduction of peak water demand achieved; Linkages and coordination among agencies involved in water harvesting and storage strengthened; Alternative water sources developed; Land for recharge of shallow groundwater aquifers defined and delineated; Regulations and incentives that promote harvesting of rain water in urban and rural areas developed; Harvesting of flash floods promoted; MWS and WRA representation on County Development Control Committees enhanced;	MWSI: WRA: KMD; RDAs: WASREB; NWHSA; WWDAs, RCGW	County Government ; Council of Governors	Other government ministries; Donors, NSAs and Private Sector	continuous
	Promote water use efficiency	Number of economic incentives for water saving technologies developed; Water pricing model reviewed; No of public awareness campaigns on the need to conserve water and change of attitude and behaviour on water use; Regulations for the design of domestic water works and plumbing to minimise wastage developed; Level of use of appropriate sanitation technology disseminated; standards for water use equipment revised.	MWSI: WRA: KMD: WASREB; WWDAs; NWHSA	County Government ; Council of Governors	Other government ministries; Donors, NSAs and Private Sector	3 years
	Streamline water allocation systems	No of studies to determine the environmental flow requirements for all the rivers across the catchments undertaken; Water allocation and permit issuance guidelines reviewed; Penalties for illegal water abstraction and water allocations and permits reviewed; Database on water allocation and permit issuance developed and maintained; No of collaborations addressing water use priorities; Capacity to monitor and enforce controls for water allocation and permits.	MWSI: WRA: NEMA: KMD; WASREB; WWDAs, NWHSA	County Government ; Council of Governors	Other ministries Donors, NSAs and Private Sector	3 years
	Enhance strategic water reserves	Water reserve capacities at the national and county level mapped; Levels for strategic water reserves determined; Strategic water reserve framework for domestic, agricultural and industrial supply at the national, county and local level. developed; catchment and	MWSI, WRA, NEMA, KMD; RDAs	County Government ; Council of Governors	Other ministries Donors, NSAs and	3 years

Theme	Strategic Objective	Measures of achievement	Implementing Agency			Time frame
			National Government	County Government	Other stakeholders	
		ecosystem management activities integrated into irrigation projects and other water storage investments; investments in surface and underground water storage infrastructure for strategic reserves enhanced; Framework for public awareness on need to establish household, community and regional water reserves developed	WASREB; WWDAS; NWHSA, RCGW		Private Sector	
	Promote cooperation in the management of shared water resources	Framework for assessment, monitoring, information and knowledge sharing of transboundary resources established; Sustainable mechanisms for exploitation, utilisation, management and conservation of water resources developed; Common and harmonised approaches to the prevention and control of pollution of shared water resources developed Continued engagement with relevant countries promoted; human technical capacity for transboundary water resources, management, and development for regional and international negotiations strengthened	MWSI; WRA, RCGW	County Government; Council of Governors	Other ministries Donors, NSAs and Private Sector.	3 years
Theme 4: Water Disaster Management	Strengthen prevention and mitigation mechanisms for floods and other water related disasters	No of programmes for sustainable management of rain and storm water in urban areas; Soil and water conservation practices promoted; Regulations on riparian areas, wetlands and water infrastructure enforced; Level of enforcement of polluter pays principle; Investments in water quality monitoring stations to prevent water pollution related disasters enhanced; Investment in river training increased;	MWSI, WRA, NEMA, KMD; NDMA; NPS; NDOC; WWDAs; NWHSA	County Government; Council of Governors	Other ministries Donors, NSAs and Private Sector	3 years
	Enhance preparedness and response to water related disasters	Areas with high risk and most vulnerable to water related disasters mapped; No of policies or guidelines for disaster prevention developed; Guidelines for settlements in landside and flood prone areas developed; No of people trained on DRR; No of tools and applications for Water related DRR developed; No of early warning systems for floods, drought and landslides developed; No of information systems, tools and applications for risk/vulnerability assessment developed; No of disaster evacuation centres developed; No of specialised, trained, and equipped emergency	MWSI, WRA, NEMA, KMD; NDMA NDOC NPS, WWDAs, NWHSA	County Government; Council of Governors	Other ministries Development Partners, Non State Actors and Private Sector	3 years

Theme	Strategic Objective	Measures of achievement	Implementing Agency			Time frame
			National Government	County Government	Other stakeholders	
		response teams put in place across disaster prone areas; Proportion of funds earmarked for water related disaster management; Number of emergency plans for rivers with the potential for damages from flooding developed and implemented.				
	Enhance mechanisms to promote dam safety	Regulations on dam operations during wet and dry seasons, reviewed; Regulations and guidelines for monitoring, maintenance, rehabilitation, decommissioning of dams developed; Regular and periodic inspection of dams	MWSI; WRA; NEMA, KMD; NDMA; NDOC NPS, WWDAs, NWHSA	County Government ; Council of Governors	Other ministries Donors, NSAs; Private Sector	Continuous
Theme 5*:* Governance of inter-basin and inter-county water resources	Promote fair and equitable utilisation of water resources and benefit sharing	A framework for a common understanding on water balance, sustainable water abstraction limits and water use priorities between and across basins and counties developed; Common water intakes to enhance monitoring, regulate water flow and mitigate conflicts promoted; Framework for sharing of costs and benefits with regard to inter basin and inter county water transfers developed; Framework to for joint water catchment management between counties including basin-wide water resources management plans developed; Effective conflict management mechanisms on water resources established.	MWSI WRA NEMA DRSRS KWS KFS KWTA KEFRI	County Government ; Council of Governors	Other relevant ministries; WRUAs; Development Partners, Non State Actors	3 years
	Promote cooperation in the management of inter-basin and inter-county water resources	Level of understanding of the constitutional and legal provisions governing water resources shared across counties enhanced; Awareness about the roles of different actors with regard to the management of inter basin and inter-county water resources enhanced; Framework for collaboration and engagement in the management of inter-basin and inter-county water resources established; Legal and regulatory framework on regulation and management resources to promote synergies and reduce conflicts developed.	MWSI WRA DRSRS KWS KFS KWTA KEFRI,	County Government ; Council of Governors	Other relevant ministries; WRUAs; Development Partners, Non State Actors	3 years
	Enhance stakeholder participation in	Awareness on the relevant water rights and obligations among water users and communities enhanced; Stakeholder participation in water resources planning, allocation and benefit sharing	MWSI; WRA DRSRS; KWS KFS; KWTA;	County Government	Other relevant	3 years

Theme	Strategic Objective	Measures of achievement	Implementing Agency			Time frame
			National Government	County Government	Other stakeholders	
	management of inter-basin, intra-basin and inter-county water resources	increased; No of programmes for mainstreaming gender issues in management of inter-basin, intra-basin and inter-county water resources	KEFRI	; Council of Governors	ministries; WRUAs;	
	Strengthen the role of WRUAs and communities in water management and catchment conservation	Framework to improve the governance of WRUAs developed; No of programmes for enhancing technical capacity of WRUAs to discharge their functions; No of sub-catchment water management plans reviewed and updated; Increased funding to support implementation of sub-catchment water management plans; Mechanism to for collaboration of WRUAs with other community associations developed; WRUA fees for abstraction of water through the water resources rules standardised.	MWSI WRA KWS KFS KWTA KEFRI Parliament	County Government ; Council of Governors	Other relevant ministries; WRUAs; Development Partners, Non State Actors	2 years
Theme 6: Water Resources Regulation, Planning and Financing	Enhance coordination and collaboration among water sector agencies for sustainable water resource management	Formal framework for enhancing horizontal collaboration among water sector agencies developed; Inter sectoral forum for collaboration among all water sector agencies created; No of policies or guidelines interpreting roles between different national government water agencies and County governments; Public participation in the legal and regulatory reforms increased; No of frameworks for collaboration between national and county governments; inter-agency forum for collaboration among all water sector agencies created; Coordination with relevant regulatory authorities at national and county government level on water resource planning, development and use enhanced	MWSI; WRA KWS; KFS KWTA; KEFRI Parliament	County Government ; Council of Governors	Other relevant ministries; WRUAs; NSAs	3 years
	Promote implementation and enforcement of existing laws and regulations for water resources	No of personnel trained on water sector governance across national and county levels; Amount of funding for capacity building in water sector across national and county governments; No of global best practices adopted; Capacity of water agencies to enforce water laws and regulations enhanced; Number of water sector plans and strategies harmonised among different water sector agencies; No of frameworks developed for collaboration and engagement management of shared water resources;	MWSI WRA KWS KFS KWTA KEFRI Parliament	County Government ; Council of Governors	Other relevant ministries; WRUAs; Development Partners, Non State Actors	3 years

Theme	Strategic Objective	Measures of achievement	Implementing Agency			Time frame
			National Government	County Government	Other stakeholders	
	Adopt an integrated and holistic approach to water sector planning and management	Framework for consolidation and integration of water investment and planning with development planning and budget processes developed; No of programmes taking a long-term view in water sector planning; No of programmes and fora supporting increased stakeholder participation in water planning; Monitoring and evaluation of water strategies and plans strengthened; Country`s water national master plan extended to the to cover the local and county level	MWSI WRA KWS KFS KWTA KEFRI National Treasury	County Government ; Council of Governors	Other relevant ministries; WRUAs; Development Partners, Non State Actors	5 years
	Promote sustainable financing models for water resources management	National resource mobilisation strategy developed Framework for best practices in financial management of water institutions developed; No of new financing mechanisms for water sector developed; No of PPPs implemented; No of incentive schemes implemented; Framework for the pricing of water resources taking into consideration conservation developed; Sustainable financing of WRUAs established; Provisions requiring that at least 5% of project budgets (funds) for water infrastructure is utilised for catchment management developed.	MWSI; WRA KWS; KWTA KEFRI; National Treasury	County Government ; Council of Governors	Other ministries; Donors; NSAs; Private sector	2 years
	Enhance private participation in water sector	Inventory of existing PPPs in the water sector undertaken; Procedures for integration of PPPs in the water sector reviewed; Incentives to encourage private sector participation in water resource management, sanitation and financing created	MWSI; National Treasury	County Government ; Council of Governors	Other ministries; Donors; NSAs; Private sector ,KEMPSA, FKE	5 years
Theme 7: Research, innovation, education and training	Promote appropriate basic and applied research and	No of MOUs and mechanisms to enhance collaboration among water sector institutions; Full-fledged water research organisation with capacity to respond the growing research needs in the water sector developed; No of protocols for collaboration in water research locally, nationally and internationally; National Water Research Plan developed; No of programmes drawing on	MWSI KEWI, RCGW	County Government ; Council of Governors	Universities; Research Institutions Hydrologists Professional Body;	3 years

Theme	Strategic Objective	Measures of achievement	Implementing Agency			Time frame
			National Government	County Government	Other stakeholders	
	innovation in the water sector	indigenous knowledge for research and innovation in the water sector; No of centres of excellence in water research developed.				
	Promote investments to spur successful innovations in the water sector	Opportunities for water innovations mapped; Number of strategies and mechanisms for commercialising innovations in the water sector developed; Water resources innovation fund established.	MWSI KEWI RCGW	County Government ; Council of Governors	Universities; Other Research Institutions	3 years
	Enhance dissemination and utilisation of water research outputs for improved water resource management	Integrated information system on water resources developed; No of programmes mainstreaming the utilisation of water research outputs to support decision making, efficiency and effectiveness	MWSI KEWI RCGW	County Government ; Council of Governors	Universities; Other Research Institutions	Continuous
	Promote relevant education and capacity building in the water sector	Human capacity needs of the water sector reviewed; Mandate of KEWI expanded; No of public awareness programmes on water resources management, harvesting and storage, water and sanitation services to encourage sustainable water use practices.	MWSI KEWI RCGW	County Government ; Council of Governors	Universities; Other Research Institutions	3 years
	Promote sustainable financing mechanisms for water research, innovation, education and training	No of structured arrangements with actors provide finance for water sector research and development; No of incentives for commercialisation of water research and innovation outputs; No of programmes to integrate water research, innovation, education and training resource needs into the national and County budgets	MWSI KEWI RCGW	County Government ; Council of Governors	Universities; Other Research Institutions	3 years
Theme 8: Cross cutting	Mainstream climate change	No of studies done for climate change trends and projections in Kenya; Number of water related adaptation scenarios developed;	MWSI; NEMA KWS; KFS	County Government	Other ministries;	2 years

Theme	Strategic Objective	Measures of achievement	Implementing Agency			Time frame
			National Government	County Government	Other stakeholders	
issues: Climate change and Gender	into water resource regulation, monitoring, protection, conservation and management of water resources	Number of mechanisms put in place to avail weather and precipitation information to water users; No of early warning systems suitable under catchment conditions implemented; Institutional framework within the water sector agencies to mainstream climate change strengthened; Capacity of the water sector agencies to attract and absorb domestic and international climate change financing enhanced.	KWTA KEFRI NDMA RCGW	; Council of Governors	WRUAs; Donors; NSAs;	
	Mainstream gender and integrate youth and the marginalised in regulation, monitoring, protection, conservation and management of water resources	Framework for linking social and gender aspects with dimensions of water resources management developed; No of programmes established to enhance gender equity in the management, control and use of water resources; no of programmes that enhance human and institutional capacity to mainstream gender in water and sanitation; Number of programmes that integrate youth and marginalised groups including people with disabilities in the management of water resources	MWSI NEMA KWS KFS KWTA KEFRI NDMA	County Government ; Council of Governors	Other ministries; WRUAs; Donors; NSAs;	2 years

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