2020

An Analysis of Kenya's water sector institutional and regulatory framework from 2002-2017

Belinda Korir
Strathmore Business School (SBS)
Strathmore University

AN ANALYSIS OF KENYA'S WATER SECTOR INSTITUTIONAL AND REGULATORY FRAMEWORK FROM 2002-2017

BELINDA KORIR

MPPM/101077/17

This dissertation is submitted in partial fulfilment of the requirements for the award of a Master in Public Policy and Management of Strathmore University

Strathmore Business School

Strathmore University

Nairobi, Kenya

July, 2020

DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other university. To the best of my knowledge and belief, this dissertation does not contain any content that was produced by another person except where due reference is made in the dissertation itself.

Name: Belinda Korir

Reg. No.: MPPM/101077/17

Signature: 

Date: 3/07/2020

Approval

The thesis of Belinda Korir was reviewed and approved by:

Prof. Ruth Kiraka
Strathmore University Business School

Date: …14th August 2020 ……..

ABSTRACT

Water is key for human survival as well as the economic and social development of all nations. It is, however, a scarce resource making effective water governance crucial in its efficient use and distribution among the various competing needs. Water governance is dependent on a framework of policies, legislation and institutions. Over the years, Kenya has enacted a number of water legislation that have led to the creation of multiple water institutions. However, challenges have still been experienced which have been attributed to the multiplicity of institutions and the lack of coordination mechanisms amongst them. This study sequentially examined the water regulatory and institutional framework for the water sector from 2002 to 2017, identified gaps in the regulatory framework, and the resulting challenges in execution of their mandates. It used a cross-sectional and descriptive research design and is qualitative in nature. The study population included the water institutions with the *Water Act, 2002,* the *Water Act, 2016,* the *Constitution of Kenya, 2010* forming other sources of data. Purposive sampling was used to identify key informants and snowballing used to refer the researcher to the appropriate/relevant staff members. Data collection was conducted by document analysis of the *Water Act, 2002,* the *Water Act, 2016* and the *Constitution of Kenya, 2010* and Key Informant Interviews (KIIs) with key officials of the water institutions. Data were transcribed, coded and categorized then themes, patterns and relationships elicited from the data. Data interpretation was done by scanning data for repetitive words and phrases and comparing the findings from the interviews and document analysis with the findings of literature review and discussing similarities and differences between them. The study found that the regulatory framework establishes institutions for regulation of water resources and water service provision, water works development and water harvesting and storage and financing of water services. Each institution has roles assigned to it which cater for principles of participation, accountability, and tariff setting. Despite this, gaps still exist in regulation of some institutions, overlaps in roles and lack of coordination mechanisms among the institutions and challenges in funding, regulation and coordination. As a result, the study proposes the inclusion of coordination mechanisms, clear outlining of roles, regulation of institutions involved in water works and envisioning of mechanisms for County Government involvement on matters that directly involve them in the Water Act.

Key words: Water Regulation, Water Governance, Institutions, Water Resource Management

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS AND ACRONYMS

BWRC	Basin Water Resources Committee
CAAC	Catchment Area Advisory Committees
GWP	Global Water Partnership
CS	Cabinet Secretary
NWCPC	National Water Conservation and Pipeline Corporation
NWHSA	National Water Harvesting and Storage Authority
OECD	Organisation for Economic Co-operation and Development
WAB	Water Appeals Board
WARMA	Water Resources Management Authority
WASREB	Water Services Regulatory Board
WGF	Water Governnace Facility
WRA	Water Resources Authority
WRUA	Water Resources Users Associations
WSB	Water Services Boards
WSTF	Water Sector Trust Fund
WSTF	Water Services Trust Fund
WWDA	Water Works Development Agencies

ACKNOWLEDGEMENTS

I thank the Almighty God for His provision, guidance and protection throughout this journey. Without Him this would not have been possible.

I extend my gratitude and appreciation to my supervisor Prof. Ruth Kiraka for her unwavering support, patience, guidance and feedback that has enabled me to successfully complete my research project. I will always be indebted to you.

I further wish to extend my sincere gratitude to the participants of this study from the Water Resources Authority and the Water Services Regulatory Board.

I am also grateful for the support my family; mother, father and my three siblings; Brian, Ian and Stacy have accorded me during this period. I would like to thank you for your prayers, constant cheering and encouragement throughout this education journey. You made this journey possible.

Finally, my sincere gratitude to my classmates and lecturers at the Strathmore University Business School, without your encouragement and support, this would not have been possible.

DEDICATION

I dedicate this work to my parents, Barnabas and Prisca who have continuously supported and prayed for me and for instilling the virtue of patience, hard work and discipline all of which were crucial in the completion of this thesis.

CHAPTER ONE: INTRODUCTION TO THE STUDY

1.1 Introduction

Water is at the core of sustainable development and is critical for socio-economic development, energy and food production, healthy ecosystems and for human survival (Yıldız, 2017). It serves as a crucial link between the society and the environment. Water is also a rights issue with the United Nations General Assembly having declared "safe and clean water and sanitation a human right essential to the full enjoyment of life and all other human rights" in 2010 through Resolution A/RES/64/292 (United Nations General Assembly, 2010). As the world's population grows, the demand for water mounts and pressure on finite water resources intensifies (Population Action International, 2011). Integration across the water and water-using sectors is therefore essential for ensuring that limited water resources are shared effectively among many competing demands (United Nations, 2018).

Approximately one fifth of the world's population lives in water scarce areas while another 1.6 billion face scarcity due to inadequate infrastructure or the inability of local institutions to ensure a regular supply of fresh water (Food and Agriculture Organization, 2007). Half of the world's population is currently living in potentially water scarce areas at least one month per year and this could increase to some 4.8–5.7 billion people by 2050 (Burek, Satoh, Fischer, Kahil, Scherzer, Tramberend, Nava, Wada, Eisner, Florke, Hanasaki, Magnuszewski, and Wiberg, 2016).

A country is categorized as 'water stressed' if its annual renewable freshwater supplies are between 1,000 and 1,700 cubic meters per capita per annum and 'water scarce' if its renewable freshwater supplies are less than 1,000 cubic meters per capita per annum (Food and Agriculture Organization, 2007). Kenya's fresh water supply stood at 692 cubic meters per capita per annum in 2015 and due to its rapidly rising population, it is expected to fall under the absolute water scarcity threshold of 500 cubic meters per capita per annum by 2030 (Food and Agriculture Organization of the United Nations, 2015).

Social development and economic prosperity of Nations depend on the sustainable management of freshwater resources and ecosystems. The establishment of Sustainable Development Goal (SDG) 6, *Ensure availability and sustainable management of water and sanitation for all*,

reflects this significance at the global level (United Nations-Water , 2018). In Kenya, water and sanitation is a key area of focus for the government. In the country's development blueprint, Vision 2030, the vision for water and sanitation under the social strategy is "to ensure that improved water and sanitation are available and accessible to all" (Government of Kenya, 2007). Effective water governance is increasingly seen as a necessary component of good water management and planning. (Lemoine & Patrick, 2014). The Global Water Partnership (GWP) defines water governance as "the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society" (Rogers & Alan, 2003). Water governance is broadly seen as a framework where all stakeholders and sectors intervene along with the Government (Camkin & Neto, 2016).

Water governance is about who gets water, when and how, and who has the right to water and related services, and their benefits. It includes formulation, establishment and implementation of water policies, legislation and institutions, and clarification of the roles and responsibilities of government, civil society and the private sector in relation to water resources and services. (UNDP-SIWI Water Governance Facility , 2016).

Regulation is one of the primary tools that governments use to shape the welfare of economies and society. Regulation on its own does not determine the outcome of policy; institutions have an important role to play. Regulatory reviews have consistently highlighted the dynamic interplay between the various institutions involved in the regulatory and implementation processes and the need to devise mechanisms of cooperation that would ensure the development of consistent and quality regulation that meets desired objectives (Organisation for Economic Co-operation and Development, 2005). This "whole-of-government" approach with its emphasis on cooperation is particularly important for the increasingly fragmented and multi-layered structure that makes up the water sector (Organisation for Economic Co-operation and Development [OECD], 2015).

Trémolet and Hunt (2006) define regulation as 'a defined set of functions that consist of ensuring that water and sanitation service providers comply with existing rules and quality standards and adapt those rules to cope with unforeseen events.' They further identify; four regulatory models;

self-regulation, regulation by contract, regulation by contract with regulator (hybrid) and regulation by agency with licensing regime and three market structures namely municipal, regional and national.

Statutory law regulates access to and use of water resources (Ogendi & Ong'oa, 2009). The United Nations Development Programme (UNDP), Stockholm International Water Institute (SIWI) and Water Governance Facility (2016) notes that the establishment of "well-defined and coherent roles and responsibilities" can pave the way toward socioeconomic and environmental benefits, including better access to water by groups deprived of formal or informal water rights in the past. It also points out that "insecurity of water rights, discrepancies between formal legislation and informal customary water rights, and unequal distribution of water rights, are also frequent sources of conflict" (UNDP-SIWI Water Governance Facility, 2016). This study therefore analysed Kenya's water sector institutional and regulatory framework between 2002 and 2017. It specifically analysed the institutional roles and responsibilities, challenges and gaps in the current legal and institutional framework and proposes areas for review.

1.2 The Water Sector Landscape in Kenya

Despite years of investment in the water sector by the government and its development partners, Kenya continues to face serious water access challenges. In 2013, 52.6 percent of households in Kenya were reported to be using water from an improved source, 19.2 percent had access to piped water and 5.9 percent had piped water to their dwelling. Twelve percent of the population had access to borehole water. However, the single most common source of water across Kenya is the river (unimproved) at 23.2 percent. Water vendors are used by 5.2 percent of the population which is a sizeable proportion of the population spending money and exposed to the risk of potentially lower quality water (Kenya National Bureau of Statistics (KNBS) and Society for International Development (SID), 2013). In 2014, 66.9 percent of the Kenyan population had access to an improved source of drinking water with 57 percent having access in rural areas and 85.7 percent in urban areas (Kenya National Bureau of Statistics (KNBS), 2015). There are, however, inequalities in access to water from an improved source. Data from 2015/2016 shows that at least 80 percent of households have access to water from an improved source in ten counties (Nairobi, Kiambu, Kakamega, Kisii, Vihiga, Kajiado, Nyamira, Nyeri, Mombasa and Nyandarua) while in contrast, over 50 percent of households do not have access in Nandi, Wajir,

Elgeyo-Marakwet, Marsabit, Samburu, West Pokot, Narok, Homa Bay, Mandera, Baringo and Bomet (Development Initiatives, 2018).

Kenya's water sector continues to face operation and maintenance challenges emerging from poor management practices, inadequate funding of the sector and disproportionate funding within the sector (Chepyegon & Kamiya, 2018). This is despite significant investments by the government and its development partners over the years. Since independence, the country's public water services have continued to deteriorate failing to meet the demand of the increasing population. Kenya's natural water replenishing rate is classified as one of the lowest in the world making it a chronically water scarce country (Government of Kenya Ministry of Water and Irrigation, 2005).

Prior to 1974, water was managed by the Department of Water Development (DWD) which was housed in various ministries including Public Works, Natural Resources and Agriculture. In 1974, a National Water Master Plan Initiative was launched whose primary aim was to ensure availability of potable water within reasonable distance to all households by 2000. In line with the 1974 Initiative, the Government upgraded the Ministry of Agriculture's Department of Water Development into the Ministry of Water which embarked on an ambitious water supply development program. Unfortunately, in the 1980s, Government experienced budget constraints which curtailed these efforts. Priority was therefore given to the rehabilitation of existing schemes and construction of a number of huge water projects that included the Baricho and Kilimanjaro water schemes located at the Kenyan Coast and the Eastern regions respectively (Institute of Economic Affairs (IEA), 2007).

In 1988, the National Water Conservation and Pipeline Corporation (NWCPC) was established under the State Corporations Act to manage government operated water supply systems (Mumma, 2007). The National Water Conservation and Pipeline Corporation (NWCPC) and the local authorities known as Municipalities and in the case of Nairobi, the Nairobi City Council, were mandated by law to manage water and sanitation services. The local authorities had the power to establish and operate water supply systems under the areas of their jurisdictions and also create and operate sewerage services. Under this framework, NWCPC had the responsibility of managing the government operated water supply systems. The overall

responsibility of development and management of water supply systems was the mandate of the Ministry of Water (Migai, 2007).

The legislation further created a number of other institutions; the Ministry of Water and Irrigation, the Water Resources Authority, Catchment Boards, Regional Water Committees, the Water Apportionment Board, Local Water Authorities, and Water Undertakers (Government of Kenya, 2002). The result was that the water sector was considered ineffective with poor response to client needs since decision-making was highly centralized (Wambua, 2004). Decision making processes had very little room for public participation and private sector participation was not envisioned. Further, whereas many institutions were created under the law, there was ineffective separation of functions creating "uncertainty in decision making" (Migai, 2007). This resulted in a large section of the population being underserved (Wambua, 2004).

As a result, a new water policy was adopted in 1999 by the government that sought to establish a sustainable and efficient water management system in the country (Government of Kenya, 1999). The policy moved government from service provision and restricted it to regulatory functions with service provision being left to municipalities, private sector and communities (Institute of Economic Affairs (IEA), 2007). The policy also stated that the Water Act, CAP 372 would be updated to transfer water facilities to other service providers and regulation introduced to give other institutions the legal mandate to provide water services and regulation mechanisms (Institute of Economic Affairs (IEA), 2007). This policy and the taskforce set up to review the Water Act set ground for what was eventually described as the water sector reform 2002.

In 2002, Kenya launched an ambitious reform programme for the water sector. It passed new legislation with clear roles for the key water institutions, increased public spending to the sector, and pursued separation of water resources management from water supply services which are characterised by different governance features. These reforms are acknowledged to be one of the most advanced and comprehensive in the whole of Africa (Rampa, 2011).

With the promulgation of the *Constitution of Kenya, 2010* (Government of Kenya, 2010), a number of government functions were reorganized. The Constitution established two levels of government with separate functions but required corporation and interdependence in service

delivery. The fourth schedule to the Constitution lists the functions allocated to the national and the county governments. With respect to the water sector, the responsibility of supply of water and sanitation was assigned to the county governments while policy-making and protection of water towers was assigned to the National Government. The Constitution required the transfer of functions from the centralized government structure to the county governments where such functions were allocated to the county governments. This was to be followed by movement and allocation of resources to the county governments to undertake the functions.

1.3 Problem statement

Whereas the objective of the 2002 water reforms was to improve coordination and end duplication of roles, the resulting institutional framework was referred to as "over-institutionalization" despite creating clear separation between 'water resources management' and 'water services' (Rampa, 2011). Even more significantly, perhaps, the *Water Act, 2002* failed to clearly assign and coordinate institutional responsibilities (Migai, 2007).

Water and sanitation service delivery requires a high level of cooperation and interdependence between both levels of government. Article 189 (b) of the Constitution requires both levels of government to "assist, support and consult" each other and, "as appropriate, implement the legislation of the other level of government" (Government of Kenya, 2010). The *Water Act, 2016* aligns the regulation, management and development of water resources and water and sewerage services to the *Constitution of Kenya 2010*. The *Water Act, 2002* established the Water Resource Management Authority, Water Services Regulatory Board, and the Water Appeal Board. In contrast the 2016 Act redefined and assigned new roles to previously existing bodies and established a greater number of institutions under four main focal areas; regulation of management and use of water resources, water services, Water Sector Trust Fund and Dispute Resolution (Government of Kenya, 2016).

Few researchers have taken a historical analysis of Kenya's water policies to identify gaps and discontinuities that have affected water management and service delivery. Kaijser (2003) and Nilsson (2006) argue that unless a historical perspective is applied, fundamental problems in the delivery of services in the sector may be overlooked in analyses. Nilsson and Nyanchanga (2008) undertook one such study that provided a historical overview of water policy in Kenya

from 1900 to 1990, contextualizing their findings in the Water sector reforms of the late '90s and early 2000s.

Studies had been conducted to analyse the implications of the *Water Act, 2002* (Mumma, 2007), issues that are hampering progress in improving water sector governance in Kenya (Rampa, 2011), to highlight critical water sector reform implementation issues in Kenya (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2008) and to document the legal framework under the *Constitution of Kenya 2010* (World Bank, 2015). There was, however, no sequential documentation on the various regulatory and institutional framework changes and their resulting effect on the water sector in Kenya. Previous studies also fail to classify the nature of the drivers for change in terms of exogenous and endogenous factors and have not examined the legislation in line with the principles that water legislation should adhere to. The literature further fails to examine key institutions created for water governance and the specific roles and responsibilities assigned to them.

This study therefore analysed Kenya's water sector institutional and regulatory framework between 2002 and 2017, with the exogenous and endogenous factors, principles and roles, rights and responsibilities in the political, social, economic and environmental dimensions taken into consideration. It identified gaps in the regulatory framework, the resulting challenges in implementation and proposes possible areas of review to the policy framework.

1.4 Research objectives

The main objective was to analyse Kenya's water sector institutional and regulatory framework between 2002 and 2017. The specific objectives of the study were to:

1. Examine the roles and responsibilities assigned to the various institutions created by the regulatory framework between 2002 and 2017 and how they have evolved.
2. Identify the gaps in Kenya's water sector institutional and regulatory framework between 2002 and 2017.
3. Discuss challenges experienced by national water sector institutions in implementing their mandate as a result of the regulatory framework between 2002 and 2017.

Based on the findings of this study, areas of review of the regulatory framework and institutional roles were highlighted.

1.5 Research questions

1. What are the roles assigned to the various institutions created by the regulatory framework between 2002 and 2017 and how have they evolved?
2. What gaps exist as a result of the institutional and regulatory framework Kenya adopted between 2002 and 2017?
3. What challenges have been experienced by the National water sector institutions in implementing their mandate as a result of the regulatory framework between 2002 and 2017?

1.6 Scope of the study

This study examined the legal framework governing the water sector between 2002 and 2017. It specifically focused on the *Water Act, 2002*, the relevant aspects introduced by the *Constitution of Kenya 2010* and the *Water Act 2016*. It further restricted itself to the national institutions created to govern and manage water resources and water services, their evolving roles, gaps and challenges experienced.

1.7 Significance of the study

This sequential analysis complements the current discourse on water reform by highlighting gaps in legislation and challenges experienced by the various institutions. It informs the areas of improvement in policy and regulatory frameworks for effective management of the country's water resources.

CHAPTER TWO: LITERATURE REVIEW

This chapter provides a critical review of literature on water regulation or legislation and studies conducted on this subject. It is discussed under the following sub-headings: public interest theory, empirical literature on the water sector regulatory framework, institutional roles, gaps in legislation and challenges experienced in implementation of the water laws; research gap and conceptual framework.

2.1 Public Interest Theory

'Theories of regulation try to explain why regulation is adopted' (Guerin, 2003). The public interest theory posits that regulation is public demand driven and it is used to correct market failure and help achieve economic efficiency. There are three key elements of public interest theory which include 'existence of market failure', existence of 'an efficient political process' and 'the choice of efficient regulatory institutions' (Den Hertog, 2010). It assumes that the regulatory regime will both aim for and achieve economic efficiency. This theory assigns the regulatory responsibility to government assuming that government is a neutral body. It, however, fails to predict how the public interest is translated through political institutions into a decision, who will be regulated and who will receive the benefits or bear the costs, or the form of the regulation (Den Hertog, 1999).

The public interest theory is based on the premise that the ideal political community is that in which property is owned in common and serves a common interest as envisioned by Plato (Den Hertog, 2010). The theory postulates that inefficiency or inequity needs to be corrected through regulation so that it responds to public demand in a satisfactory manner. This is based on the premise that service provision is inherently inefficient and inequitable when left to operate on its own (Glaeser & Shleifer, 2003). Regulation is needed in terms of formulating and enforcing policies, standards, guidelines and plans that ensure that instead of serving selfish interests of particular individuals or groups of people in society, services are provided to benefit society as a whole (Armstrong & Sappington, 2007). This theory was applied in this study to analyse the nature of regulation that takes place in the regulation of the management of water resources and service delivery and the aspects put in place by the Acts to cater for the public interest.

2.2 Empirical literature

2.2.1 Water sector regulatory framework

The Water sector globally, is inherently complex. It connects across sectors, people, scales and geography (Organisation for Economic Co-operation and Development, 2005). As such, water policy is intricate, with multiple decision makers, institutional arrangements, policy tools and an ever-increasing number of stakeholders. This results in a complexity which often results in policies that are "disjointed, reactionary and at odds with a system of coordinated water management" (Gerlak, 2006).

Gerlak (2006) examined five historical streams of water policy in the United States, revealing the strain and stresses of intergovernmental relations pertaining to water resource management. The review focused on the United States of America water policy over a period of 250 years and revealed a highly fragmented policy making environment with multiple agencies managing narrow components or constituencies and a patchwork of statutes and laws covering everything from governance to resource management, from hydro power to flood control. Her study noted over eighteen federal agencies, twenty-five water programs, over seventy appropriations accounts, twenty-three committees and sub-committees in Congress and over 200 federal rules and regulations which have resulted in an increasingly volatile and highly contested water landscape.

Kaika (2003) examines the intricate process of developing the European Union's Water Framework Directive and saw the Directive as a response to economic, political and social changes related to water management, including the shift from government to governance, the liberalization of water markets and the emergence of a new set of institutions, actors, etc. and their respective relations (i.e. social capital). For the European Union, the development of the Water Framework Directive in 2000 was a response to, among other things, "the increasing complexity of water resource management, the increasing number of actors and institutions involved in the process and the newly vested economic interests in water supply" (Kaika, 2003). The *World Bank's* 2017 report on the *Performance of Water Utilities in Africa* shows that the demand created by Africa's rapidly growing urban population, which grew by 80% (from 206 million to 373 million people) between 2000 and 2015 has not been met by the region's water

supply (Van den Berg & Alexander, 2017). Regulation is intended to provide a balance between social and commercial goals. Studies show that African countries with formal regulatory agencies in place provide better customer protection and higher service quality but in contrast, these countries also have low water coverage and their financial and operational performance is lower than those without a regulator (Van den Berg & Danilenko, 2017).

Saleth and Dinar (2000) explored the highlights in institutional changes in water sector across eleven countries. Their paper aimed to unravel the nature and origin of the changes in water law, water policy, and water administration and evaluate their implications for global water sector policy, based on a review of water institutional changes in 11 countries: Mexico, Chile, Brazil, Spain, Morocco, Israel, South Africa, Sri Lanka, Australia, China, and India. In Mexico for instance, they trace water reforms from 1988, identifying various legal changes beginning with the irrigation segment in 1988 which saw a transfer of public irrigation systems to user groups. In their analysis of the water sector changes in Mexico, they identify a common theme towards decentralization and privatization initiatives. Several African countries have adopted a community-based model for water service provision as opposed to the traditional contracting out model. While this has been beneficial, the amalgamation of both these systems of management has been more effective as the formal user associations take on the role of local regulatory bodies while functions remain on a contractual basis (Jaglin, 2002).

Nilsson and Nyanchanga (2008) set out to understand how urban water technology co-evolves with social change in Kenya and Uganda, and in particular; understanding the drivers of technological change and the barriers that impede change. They found that between 1900 and 1990, policy changes were largely as a result of increasing political influence on the policy rather than technical input and a focus on social objectives. Kenya instituted water sector reforms in 2002, described as the most comprehensive reform in the water sector in any country. It established a "dual governance system" in which distinct institutions were to support water resource management as separate from those charged with water service delivery (Rampa, 2011).

Saleth and Dinar (2000) identified the sources of policy and legal changes by looking into patterns and clear trends across countries. In their review, they postulate that there are

endogenous and exogenous sources of change, the former comprising of factors such as water scarcity, performance deterioration, and financial non-viability while the latter includes factors such as macroeconomic crisis, political reform, natural calamities and technological progress. According to them, 'these factors together raise the opportunity costs of institutional change, reduce corresponding transaction costs and create pro-reform climate. In identifying common trends in institutional changes in water policies, they come up with four general themes; a shift in focus from water development to water allocation, a renewed focus on decentralization and privatization, a move towards integrated resource management and an insistence on financial viability and physical sustainability (Saleth & Dinar, 2000).

Regulatory framework changes may be to correct for challenges posed by the multiplicity of actors, policy and institutional frameworks makers leading to disjointed policies as seen in the case of the United States of America and the European Union. It could result from changing population demands where regulation is changed to provide a balance between social and commercial goals. In some cases it results from changing ownership of responsibility and possibly reducing the responsibilities of Governement e.g. in Mexico where the focus is on decentralization and privatization and in some African countries which have adopted community-based model for water service provision as opposed to the traditional contracting out model. Policy changes can also result from political influence on the policy rather than technical input and a focus on social objectives such as Kenya's establishment of a "dual governance system" to cater for water resource management and water service delivery.

Ehrhardt, Groom, Halpern, and O'Connor (2007) discuss the regulation of water and sanitation services in urban areas. They explored ways of thinking about regulatory design as part of a wider, country-specific program to reform the way in which water supply and sanitation services are provided and paid for. They also discuss how to approach regulatory design by encouraging decision makers and their advisors to apply sound principles within country-specific settings, rather than advocate best-practice models without a thorough analysis of whether these are suitable for the country's context. They further state that a good regulatory system should embody the following principles; coherence between tariffs and service standards, predictability, credibility, legitimacy and accountability.

Mwanza (2010) in his study to determine the roles and institutional arrangements for economic regulation of urban water services in Sub-Saharan Africa lists proportionality, accountability, consistency, transparency and services to the urban poor as features of a good regulatory system. He further states that a regulatory framework should include approval of tariffs to ensure commercial viability of the service providers, protection of consumers against monopoly practices of service providers, the regulator being a repository of knowledge and experience of water issues in the country as well as helping the poor gain sustained access to water services. Banerjee and Morella came up with a regulation index that comprises of parameters such as autonomy, accountability, transparency and tools through which they assessed the effectiveness of the various regulatory frameworks (Banerjee & Morella, 2011).

Trémolet and Hunt (2006) while seeking to provide practical guidance on how regulatory frameworks can be designed and implemented in a way that is more conducive to expanding access and improving service to poor customers stated that design should avoid overambitious and unrealistic coverage targets, allow differentiated service levels, give incentives to the main operator to subcontract with smaller operators, define clear institutional mechanisms to verify enforcement to coverage targets and use incentives to ensure the operators serve the poor.

2.2.2 Institutional roles in water governance and management

Governing water includes the formulation, establishment and implementation of water policies, legislation and institutions, and clarification of the roles and responsibilities of government, civil society and the private sector in relation water resources and services (UNDP-SIWI Water Governance Facility , 2016).

A primary responsibility of the government is to ensure good water governance. It is not the responsibility of the government to undertake all the functions of water governance, but it does have a responsibility to ensure that such a framework exists. The government's responsibilities include ensuring that long-term water policies and plans are established and interested parties, including water users, environmental and social advocates, and the broader community, have the opportunity for effective engagement in the process (Camkin & Neto, 2016). Camkin's and Neto's study examined the rights and responsibilities of various actors in water governance through a selection of key water issues, including human rights to water and sanitation,

allocation of water for commercial purposes, security of water entitlements, water use efficiency, funding water resource management (WRM), the role of science, environmental advocacy and the maintenance of ecosystem services (ES). It also examined the balance of rights and responsibilities of the various players in water governance to encourage discussion by scholars and policy practitioners on whether the right balance is currently being achieved, particularly with regard to the achievement of intergenerational equity.

Nilsson and Nyanchanga (2008) found that from 1900 to 1990 the major change that had taken place is the general water sector institutional framework. As a result of the Water Act, 2002 several institutions were created under the law with ineffective separation of functions creating "uncertainty in decision making" (Mumma, 2007). Similarly, Rampa (2011), found that the water management structure in Kenya is in "numerous institutions, layers of geographical interventions and competencies.

Water Governance has four dimensions; social, economic, political and environmental (UNDP-SIWI Water Governance Facility , 2016). The social aspect covers the equitable distribution of water resources and services among various social and economic groups and the resulting effects on society. Political aspect ensures equal rights and opportunities for water stakeholders to take part in decision making processes. Economic dimension ensures efficiency in water allocation and use. Environmental aspect caters for sustainable use of water.

Roles, rights, and responsibilities in the social dimension of water governance relate to; human rights to water and sanitation, participatory processes and decentralized decision making and building capacity for effective water governance. In the economic dimension the roles, rights and responsibilities are; securing water access entitlements, meeting the costs of a sustainable water future and ensuring productive and efficient use of a community asset. The political dimension includes; establishing and maintaining an inclusive water governance framework, transparency in water policy planning and decision making and the role of science in decision making. Lastly, the environmental dimension includes; advocating for the environment, new policy thinking: linking integrated water resources management (IWRM) and an environmental sustainability approach and water use and intergenerational equity (Camkin & Neto, 2016).

Table 2.1 tabulates the dimensions, their definition and examples of roles, rights and responsibilities under each.

Table 2. 1 Water Governance Dimensions

Dimension	Definition	Examples of roles, rights and responsibilities
Social	The equitable distribution of water resources and services among various social and economic groups and its effects on society.	• Human Rights to Water and Sanitation • Participatory Processes and Decentralized Decision Making • Building Capacity for Effective Water Governance
Economic	Efficiency in water allocation and use and the role of water in overall economic growth.	• Secure Water Access Entitlements • Meeting the Costs of a Sustainable Water Future • Ensuring Productive and Efficient Use of a Community Asset
Political	Equal rights and opportunities for water stakeholders to take part in decision-making processes. Participation facilitates more informed decision making and more effective implementation and enhances conflict resolution.	• Establishing and Maintaining an Inclusive Water Governance Framework • Transparency in Water Policy Planning and Decision Making • The Role of Science in Decision Making
Environmental	Sustainable use of water and related ecosystem services. The sufficient flow of water of appropriate quality is critical to maintaining ecosystem functions and services that build upon them.	• Water Use and Intergenerational Equity • Advocating for the Environment • New Policy Thinking: Linking Integrated Water Resources Management (IWRM) and an Ecosystem Services Approach

Source: Author, 2020

2.2.3 Regulatory gaps in the water sector

In Africa only 12.9% of the water utilities operate efficiently further supporting the fact that Africa's water sector operates at an extremely high level of inefficiency (Estache & Kouassi, 2002). This was concluded after an analysis of the determinants of the efficiency levels reached by twenty-one African water utilities. They assessed efficiency through the estimation of a production frontier for the sector in Africa. And the authors show that the institutional capacity of the country, as well as its governance quality, are significant driving factors in the performance of each firm.

McGarry, Mugisha, Hoang-Gia, Unheim and Myles (2010) investigated whether poor governance has been a major contributing factor to lack of sustainability. They further assessed the state of water sector governance in Africa looking at a very broad range of governance-related elements, including legislation and regulation, decentralization and devolution, sector-wide approaches, financial management, monitoring and evaluation, accountability and corruption, civil society participation, gender, alternative service provision, public-private partnerships and equitable service delivery. They found that one of the reasons for this could be that the laws and regulations defining African water legislation are often extremely complex and contain gaping holes that ultimately hinder good governance.

Nilsson and Nyanchanga (2008) while concluding that water provision is a socio technical system, they add that policy change is not the only factor required to make water sector reforms successful other factors need to be considered e.g. actors involved. Further they conclude that a long-term perspective is necessary to unearth some of the reasons for institutional shortcomings and why they persist.

In Brazil changes in the water sector began in 1988 whereas the water national policy law was enacted in 1997. With many successive changes in laws and acts, consolidating water issues into a single administrative entity has all but failed with many water-related functions remaining dispersed. Across the range of counties studied, most water policies remain silent on the issue of water pollution, which has now come to the fore as a critical determinant to water quality and the right to access clean water (Saleth & Dinar, 2000).

Naiga, Penker and Hogl (2015) examined Uganda's experience with the shift from a supply driven to a demand driven approach in rural water provision since 1990. The paper aimed to shed light on the rural population's access to safe water within the changing institutional frameworks by conducting an analysis on individual and group interviews with key informants from national to community levels and relevant official documents with the 'Social-Ecological Systems' framework. In their discussion, they identify operation and maintenance of drinking water infrastructure as a major challenge as well as the incompleteness and inconsistencies within the devolution process in Uganda and hence propose that the issue in water sector changes is not necessarily one of approach but rather one of creating a consistent multi-actor and multilevel governance structure that recognized existing and past structures with a way of motivating local users to play a part.

The *Water Act, 2002* creates "conflicts between the institutions it creates and…local authorities" (Migai, 2007). He states this in his critique of the Kenya Water Act of 2002 where he argues that it established an institutional framework for water governance that is neither effective nor democratic and was accordingly unsuitable for efficient private sector participation. According to Ogendi and Ong'oa (2009), in Kenya, as in many other places around the world, legislation and policy on water use and management do not take customary land-tenure systems into account. Policymakers have realized that the two cannot be separated, since access to water in most cases derives from access to land. They document this in their paper which focused on Kenya's water policy, availability, scarcity, and the need to incorporate ethics into the use and management of water.

In India, the government policies failed to take into account the vulnerability and scarcity of water when setting the prices. This led to the rural and urban poor paying a disproportionate amount for water by having to invest in private water sources or pay private vendors rates much higher than those charged by municipalities or irrigation departments. The fragmented nature of Governance also led to inconsistent policies between national and state governments which have similar sector-specific water departments, with separate ones for drinking water, others for major versus minor irrigation or hydropower, and others for environmental monitoring making the implementation of a holistic policy difficult (Prabhu, 2012).

2.2.4 Challenges in implementing water policies

A study examining Australia's implementation of a national regulatory framework to support the development of robust and mature water markets found that even for countries with long histories of decentralization like the United States of America and Australia, challenges from ecosystem complexities and policy fragmentation persist (Waye & Son, 2010). In an effort to introduce benefits of the private sector approach including efficiency and productivity, Kenya's Water Act, 2002 set the stage for commercialization of the water sector by requiring consumers to pay for water services (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2008). This was documented in a study focusing on the key challenges of major importance in the water supply and sanitation reforms in Kenya, Tanzania, Uganda and Zambia, and the lessons that have been learned.

Whereas the commercialization of water services was relatively successful it meant that the Water Service Providers concentrated on the urban towns which have higher disposable income and infrastructure (Migai, 2007; Rampa, 2011; Mumma, 2007). The 2002 reform thus contributed further to the rural-urban divide that has characterized the development of Kenya since independence (Migai, 2007). The commercialization of water further created a dense network of business interests resulting in business competition and illegal transactions that led to poor supply and exorbitant pricing. This further created a complex relation between the water companies established by local authorities and other service providers often, conflictual, with private interests influencing decisions and the approach of the water companies (Migai, 2007; Rampa, 2011).

A study to investigate the factors influencing water sector reforms in Tanathi Water Services Board found that the lack of access to finance and the technical and managerial capacity to use finance effectively, resistance from the formal public utilities, lack of clear guidelines for the provision and regulation of private sector involvement in the financing and management of water supply and sewerage services influence water sector reforms in Tanathi Water Services Board (Kithuku, 2014). This further interfered with the efficient supply of water to the poor people.

Moraa, Otieno, and Salim (2012) in thier paper reviewing Kenya's water supply and sanitation situation, governance structure in the water sector which includes the policies, and institutions set to address water problems and identifying key water governance components and the use of technology as a strategic tool in the thematic area of water highlight some of the challenges faced by the Ministry of Water's capacity to achieve envisaged water reform targets. They included the lack of unified framework for the management of water resources, unwillingness by some local authorities to implement certain aspects of the water reforms, inadequate private sector investment in water infrastructure, continued human settlements in water catchment areas, destruction of forests due to lack of irrigation and land reclamation policies, un-harmonized data or information system, weak monitoring and evaluation systems, ineffective communication and shortage of staff and/or skills.

A study conducted to critically reflect on the limitations of water-centric perspectives found that lack of leadership or political will, fragmented and uncoordinated weak institutions, corruption, insufficient involvement or participation of the people and failure to recognize key connections among the environmental, economic and social aspects of water are key shortcomings in water governance (De Loë & Patterson, 2017). The study also; surveyed the water governance literature to identify external connections that can influence water governance; examined the extent to which four major approaches (Integrated Water Resources Management, water security, water-energy-food nexus, water resilience) address actors, drivers, and institutions that connect water governance to other sectors and decision making situations and considered key conceptual and practical challenges of moving beyond water-centric approaches where this is warranted.

A study conducted in South Africa on the relationship between knowledge, agency, and shame found that trust and absence of knowledge among water users and managers influenced water management policies (Goldin, 2010). A study was conducted in Rwanda to guide the establishment of a national water resources management authority in Rwanda that will manage and coordinate the national water resources in a sustainable way taking the water resources management bodies in Rwanda, in comparison with the Kenyan water resources management bodies as a good example. An extensive review was conducted using governmental documents, and key institutional elements were analysed by evaluating their performance in comparing with

the Kenyan institutions. It focused on water management as opposed to water regulation and identified institutional bottlenecks with lack of clarity as to the roles and responsibilities of the various stakeholders as one of the key impediments to the development and management of water resources in a sustainable way (Aboniyo, Umulisa, Bizimana, Pascal, & Mourad, 2017).

Perret (2002) studied water policies and smallholding irrigation schemes in South Africa and looked at the National Water Act (1998) which was described as 'Internationally recognized and most promising legal framework'. The paper describes the origin and history of smallholding irrigation schemes, analyses the implications of the 1998 National Water Act on those schemes, analyses water rights and highlights contradictions, uncertainties and possible threats which may hinder further development in smallholding irrigation schemes. The paper identified various challenges among them mixed up objectives that were contradictory, lack of clarity on the implementation of features on certain key issues and lack of technical competency required to implement the Act within the implementing agencies.

The main challenge in Africa does not lie in the water sector directly but instead the weakness of institutions and governance issues that lead to excess costs in the sector (Estache & Kouassi, 2002).

2.3 Key findings and research gaps

The literature on regulatory framework captures the regulatory changes adopted by various countries and the drivers for the change. It further captures the aim of the reforms. The principles or features that make a good regulatory design include; accountability and transparency, autonomy, targets set, incentives provided, service levels, enforcement mechanism in place, predictability, credibility and coherence. The roles and responsibilities have been categorized into four dimensions; political, social, environmental and economic. Gaps identified include; failure to consider all actors, lack of long-term perspective, failure to consider other factors that affect water resource management i.e. land tenure systems, pricing that does not consider vulnerability and scarcity of water and creation of conflict between institutions. Challenges identified include policy fragmentation, complex legislation, institutional capacity and financial challenges, leadership challenges and lack of political will, uncoordinated institutions and

unintended consequences e.g. inequality, illegal transactions and business competition due to commercialization of water.

The literature did not classify the nature of the drivers for change in terms of exogenous and endogenous factors and did not examine the legislation in line with the principles that water legislation should adhere to. The literature further fails to examine key institutions created for water governance and the specific roles and responsibilities assigned to them. This research therefore analysed Kenya's water sector institutional framework between 2002 and 2017 with the exogenous and endogenous factors, principles and roles, rights and responsibilities in the political, social, economic and environmental dimensions taken into consideration.

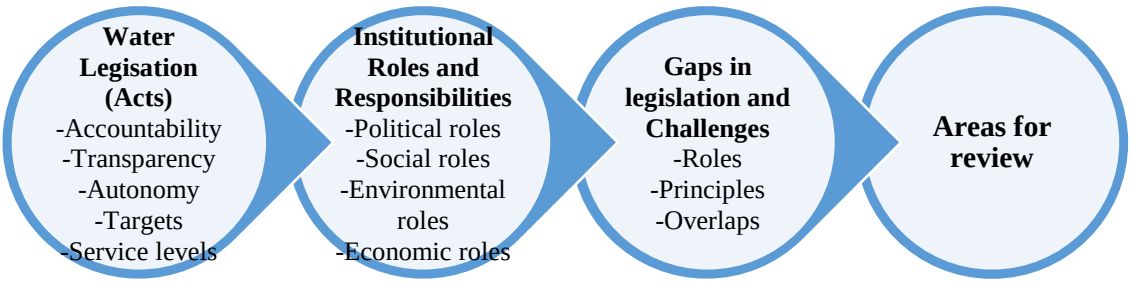
2.4 Conceptual framework

A conceptual framework is an analytical tool with several variations and contexts used to make conceptual distinctions and organize ideas. It maps out the actions required in the course of a study based on previous research and is informed by the current study a researcher is conducting. The framework is the researcher's understanding of how the concepts in the study connect with each other. It therefore identifies the concepts used in the research. It is the researcher's "map" in pursuing the investigation. It is therefore relevant for both qualitative and quantitative research (Regoniel, 2015).

The Conceptual framework below illustrates the various components of the study and their relationships. The framework is presented as a flow diagram because that is how policy processes flow; from enacting the laws, to setting up the implementing institutions, to implementing the laws (where challenges and gaps are identified) and finally reviewing the laws in light of the lessons learnt during the implementation.

The section further explains the measure for each of the components and the data that will be required for each.

Figure 2. 1 Conceptual Framework



The Water Legislation are the *Water Act, 2002* and *Water Act, 2016*. They were accessed online from the 'Kenya Law' which is an online platform under the judiciary which houses all Legal information.

The drivers for the changes in the regulatory framework were examined based on whether it was as a result of exogenous (water scarcity, performance deterioration, and financial non-viability) or endogenous factors (macroeconomic crisis, political reform, natural calamities and technological progress). These parameters of examining the drivers are derived from the theoretical framework presented in Section 2.2.1. The Act was further examined to determine whether they embody the features of a good regulatory framework listed in section 2.2.1. This was determined from data obtained during the Key Informant Interviews and the document review of the *Constitution of Kenya, 2010*.

The Water Acts were examined to identify the institutions created under the Water Act, 2002 and the Water Act, 2016. Once the institutions were determined and listed the roles assigned to each were identified. The roles were examined to determine if they had changed or remained similar between the Water Act, 2002 and the Water Act, 2016. The roles were further examined and classified based on the four key dimensions; political roles, social roles, environmental roles

and economic roles as envisioned presented in section 2.2.2. This was from data obtained from document review of the Water Act, 2002 and the Water Act, 2016.

The gaps were identified in the Water Acts in terms of the institutions created and the roles assigned to them and whether the Acts assigned the various institutions all the relevant roles necessary for efficient water sector regulation e.g. political roles, social roles, environmental roles and economic roles. The principles of transparency, accountability, autonomy, incentive provision, coherence, tariff setting, and service provision were further examined for in the Acts. This was based on data from document review of the Water Act, 2002 and the Water Act, 2016. Challenges were determined from the Key Informant Interviews who were asked whether they have experienced any challenges in the execution of the roles assigned to their respective institutions. Additionally, an examination of data from the Water Acts on overlapping roles was conducted. Respondents were asked to identify gaps in the laws. The study proposes areas in the legislation that require review as its major outcome.

CHAPTER THREE: RESEARCH METHODOLOGY

This chapter outlines the research design of the study, the target population, sampling methods and procedures, data collection and analysis methods, strategies of ensuring research quality and ethics and outlines the data collection tools that were used for the research.

3.1 Research design

Eller, Gerber and Robinson (2018) define research design as 'the process by which data gathering efforts are structured and defined'. Akhtar, Shah, Rafiq and Khan (2016) on the other hand define research design as 'the glue that holds all elements of a research work together'. This study employed a cross-sectional and descriptive research design to analyse Kenya's water sector institutional framework between 2002 and 2017. It specifically focused on the changes in the institutional framework and their roles, identified the gaps and challenges and proposes areas of review to the water sector regulation. Sampling procedures, data collection and analysis were completed within a restricted time frame.

The cross-sectional design was relevant as data would be collected at one point in time. It is descriptive in nature given that it presents the changes in Kenya's institutional framework from 2002 to 2017 as depicted in the Water Act, 2002, and the Water Act, 2016.

The study employed a qualitative approach. Qualitative research is characterized by the use of non-numerical forms of data especially in developing theory or describing and explaining complex concepts that are not easily operationalized (Eller, Gerber, & Robinson, 2018). Three broad categories of qualitative research of interest exists: observational studies, interview studies and documentary or textual analysis of various written records (Pathak, Jena, & Kalra, 2013). This study undertook an analysis of the changes of the water sector regulation after undertaking an intensive document review of existing water policies from 2002 to 2017 and obtained views on the same from a selected group of key informants in the water sector using interviews.

3.2 Population and sampling

The study population included the water institutions which were the Water Services Regulatory Board (WASREB) and the Water Resources Authority (WRA). Other sources of data included;

the *Water Act, 2002,* the *Water Act, 2016,* the *Constitution of Kenya, 2010*. Purposive sampling is a method of non-probability sampling that involves the selection of participants based on their relevance to the research questions (Bryman, 2012). Purposive sampling approach is defined as a nonprobability sample that is drawn specifically on existing knowledge of population characteristics in order to serve a specific need of a study question (Warren, Gerber, & Scott, 2018).

Purposive sampling was used to identify six water institutions namely; the Ministry of Water and Irrigation, the Water Services Regulatory Board (WASREB), Water Resources Authority (WRA), National Water Harvesting and Storage Authority, Water Sector Trust Fund and the Water Works development Agencies. One individual was identified with the help of the institutional management based on their involvement in the drafting and/or implementation of the selected documents for analysis and, therefore, their ability to provide relevant information, ideas, and insights on the subject under investigation.

Out of this sample, four key informants participated in the study. Two from the Water Services Regulatory Board (WASREB); the Director of Corporate Services and the Inspectorate Services Manager and two from the Water Resources Authority (WRA); the Head of Planning, Research and Development and the Head of Legal. The institution aided in the identification of the individual based on the criteria. Data collection continued until a saturation point was reached, and sufficient data gathered to respond to all the research questions. Snowballing was used where a key informant was unable to provide the information required. They were requested to refer the researcher to the appropriate/relevant staff member who was able to provide the information.

3.3 Data collection methods

Data collection was conducted in two parts. The first part entailed document analysis where the researcher conducted content analysis of the *Water Act, 2002,* the *Water Act, 2016* and the *Constitution of Kenya, 2010.* The purpose of the review was to establish the institutional framework and specific roles assigned to each water institution. A document review template (Appendix VI) was used to guide this process.

The second part involved key informant interviews with four key Officials in the Water Services Regulatory Board (WASREB) and the Water Resources Authority (WRA). The key informants included individuals who are directly involved in the design and/or implementation of the policies and have first-hand knowledge on the changes in the policy and regulatory framework in the water sector, the gaps within the institutional framework and the challenges facing the regulation of the water sector. Consent was obtained from the institutional management to allow the researcher to interview their staff. The key informant interview guide (Appendix V) was used to guide the interview process which took about one hour. Face to face interviews were conducted and note taking used to record the responses provided. The interview questions were open ended and specific. In cases where the key informant was not able to provide the information required the researcher requested that he or she refers to a staff member who was able to provide the information after which consenting was obtained and interview conducted.

3.4 Data analysis approaches

Data from the notebooks was typed and organized after each interview by the researcher. The data was then coded by reading through the transcripts while taking notes about significant remarks and observations that were used to generate themes. This resulted in the development of an index of words that guided the interpretation. The codes were then examined to determine whether; two or more codes had been used to describe the same phenomenon, codes related to categories in literature review or whether the respondents believed that there is a link between two or more codes. The coding units were then categorised by attaching the relevant data to their respective codes until saturation was reached. This enabled the researcher to generate general theoretical ideas based on emerging pattern and relationships.

A coding schedule was used to code and categorize the data during the document analysis of the *Water Act, 2002* and the *Water Act, 2016* in terms of institutions formed, their respective roles and gaps identified. The data from the document analysis and the KIIs were then merged by determining cross cutting codes and themes which were categorised under the same codes. Themes, patterns and relationships were then elicited from the data.

3.5 Data Presentation and dissemination

Data is presented in form of a narrative and tables to indicate the roles and responsibilities. An overview of the findings in the form of a policy brief will be developed and shared with each of the participating institutions in order to enable them to obtain the findings and recommendations emanating from the research.

3.6 Research quality

3.6.1 Reliability

The researcher ensured that there was adequate representation of all the issues that emerged from the qualitative data. To ensure reliability, this methodology section provides a detailed explanation of the research process to allow for replication. Three researchers were also involved in the coding and categorizing of data in order to explore inter-judge reliability both in the document review and the interview data analysis.

3.6.2 Validity

The key informants comprised of individuals who were directly involved in drafting, implementation and/or enforcement of the Water Act 2002 and the Water Act 2016. The researcher selected Key Informants who had experience designing, implementing or enforcing water policies since the research was specific to this area.

3.7 Ethical Considerations

Ethical approval was sought from the Strathmore University Ethics Review Board (Appendix I). A Research Authorization Permit was obtained from the National Commission for Science, Technology and Innovation (Appendix II). Permission was sought from the participating institutions prior to the data collection. Informed consent was obtained from all the key informant interview participants by explaining in detail the purpose of the research, expected outcomes, benefits, expected time required for participation, assuring them of privacy, confidentiality measures and the option to withdraw from the study at any given point prior to giving them an opportunity to voluntarily decide whether to participate in the study. A copy of the informed Consent form can be found in Appendix IV. Confidentiality of the respondents was further observed by using interview codes in the data from the interviews to ensure that data is not linked to particular respondents.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION

The chapter presents the findings of this study which sought to analyse Kenya's water sector institutional and regulatory framework between 2002 and 2017. This chapter covers the institutional roles and responsibilities assigned by the Water Act of 2002 and 2016, gaps in the legal or regulatory framework and challenges experienced in the implementation or carrying out of the various responsibilities.

4.1 Constitution of Kenya, 2010

The Constitution of Kenya, 2010 introduced fundamental conceptual and legal changes to the water sector. The first aspect is the definition of water sources such as lakes, rivers and other water bodies as public land which is held in trust by the national government for the people of Kenya. The second element is that the constitution enshrined the right to water as a human right. Article 43 of the Constitution guarantees every citizen the right to water. Further under article 21(2) of the Constitution, the state has an obligation to take measures including legislative, policy and other measures to realize the rights guaranteed to citizens including the right to water. The third aspect is the introduction of two levels of government, the National Government and the County Government.

These three aspects had a significant impact on the framework for providing water and sanitation services. The most significant aspect is the role of County Governments in the water sector. In the fourth schedule of the Constitution, the functions in the water sector were divided between the county governments and the national government. In particular, section 11(b) of Part 2 of the Fourth Schedule of the Constitution allocates to the County Governments functions relating to "implementation of specific national government policies on natural resources and environmental conservation, including (a) soil and water conservation…" Further Section 22 (c) of Part 1 of the fourth schedule of the Constitution allocates to the National government the functions in the areas of use of international waters, water protection, securing sufficient residual water, hydraulic engineering and safety of dams. The National government is also required to set the national policy governing the water sector.

The County governments are allocated "County public works and services, including storm water management systems in built-up areas; and water and sanitation services." Closely related to the function allocation is the attempt by the fourth schedule to make a distinction between what are referred to as "National Public Works" and "County Public Works" with the latter allocated to the county governments and the former the national government.

Respondents interviewed indicated that the drive for change from the Water Act, 2002 to the Water Act, 2016 was primarily to align the regulatory framework to the Constitution of Kenya, 2010. This, according to the literature review is an exogenous driver as identified by Saleth and Dinar (2000) who state that exogenous sources of change include political reform.

4.2 Institutional roles in water governance and management

The Water Act, 2002 provided for the management, conservation, use and control of water resources and for the acquisition and regulation of rights to use water. It established a number of institutions to implement it which included the Water Services Regulatory Board (WASREB), the Water Services Trust Fund (WSTF) and the Water Resources Management Authority (WARMA), the Catchment Area Advisory Committees (CAAC), the Water Resources Users Associations (WRUAs), Water Services Boards (WSBs) and the Water Appeals Board. The WSBs were in turn required to license Water Service Providers (WSP) in their areas of jurisdiction. Based on the Water Act, 2002 the sector was primarily divided into two main parts, water resource management and water service provision.

The Water Act 2016 is the legal mechanism reforming the water sector in line with the Constitution of Kenya, 2010. It aims to harmonize the existing structure under the 2002 Water Act with the devolved structure. The Water Act, 2016 establishes the Water Resources Authority (WRA), the Basin Water Resources Committee (BWRC), the Water Resources Users Associations (WRUAs), the Water Services Regulatory Board (WASREB), the Water Works Development Agencies (WWDAs), the National Water Harvesting and Storage Authority (NWHSA),the Water Sector Trust Fund (WSTF) and the Water Tribunal. These institutions are all in operation, majority having been renamed from previously existing institutions. Table 4.1 shows the institutions established under each Act.

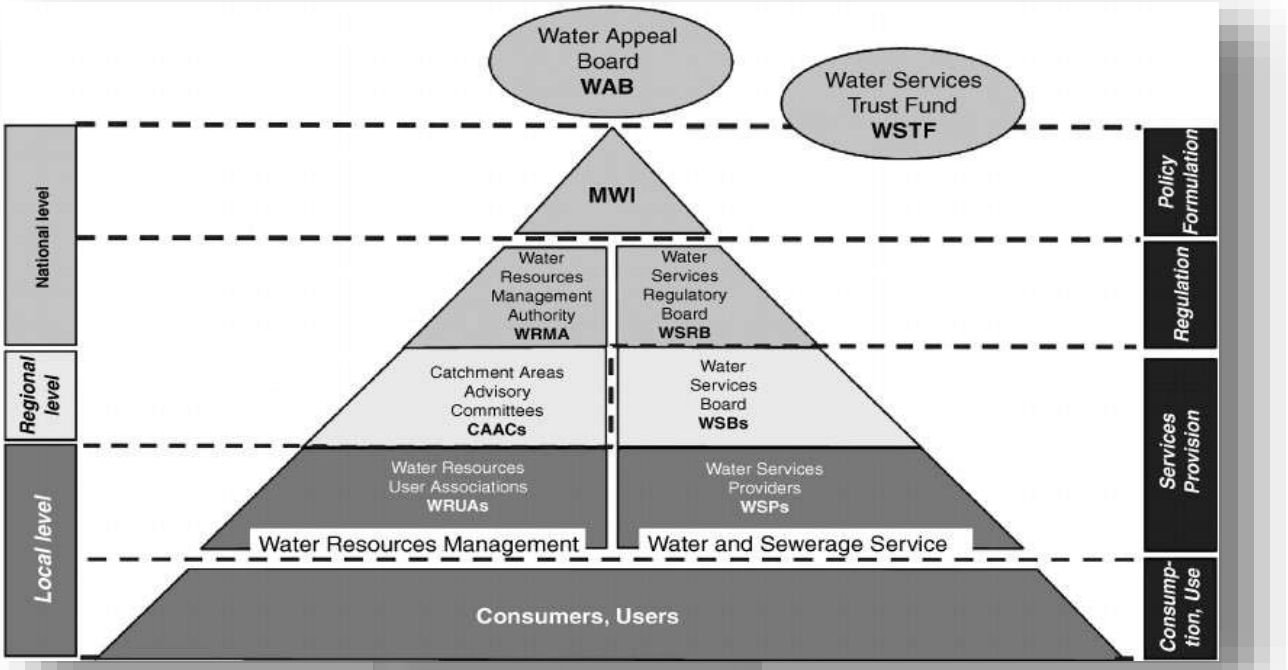
Table 4.1 Institutions established by the Water Act, 2002 and the Water Act, 2016

	Water Act 2002	**Water Act 2016**
1.	Water Resources Management Authority	Water Resources Authority
2.	Water Services Regulatory Board	Water Services Regulatory Board
3.	Water Services Boards	Water Works Development Agency
4.	Catchment Area Advisory Committees	Basin Water Resources Committee
5.	Water Resources Users Associations	Water Resources Users Associations
6.	Water Services Trust Fund	Water Sector Trust Fund
7.	Water Appeals Board	Water Tribunal
8.		National Water Harvesting and Storage Authority

Source: Author, 2020

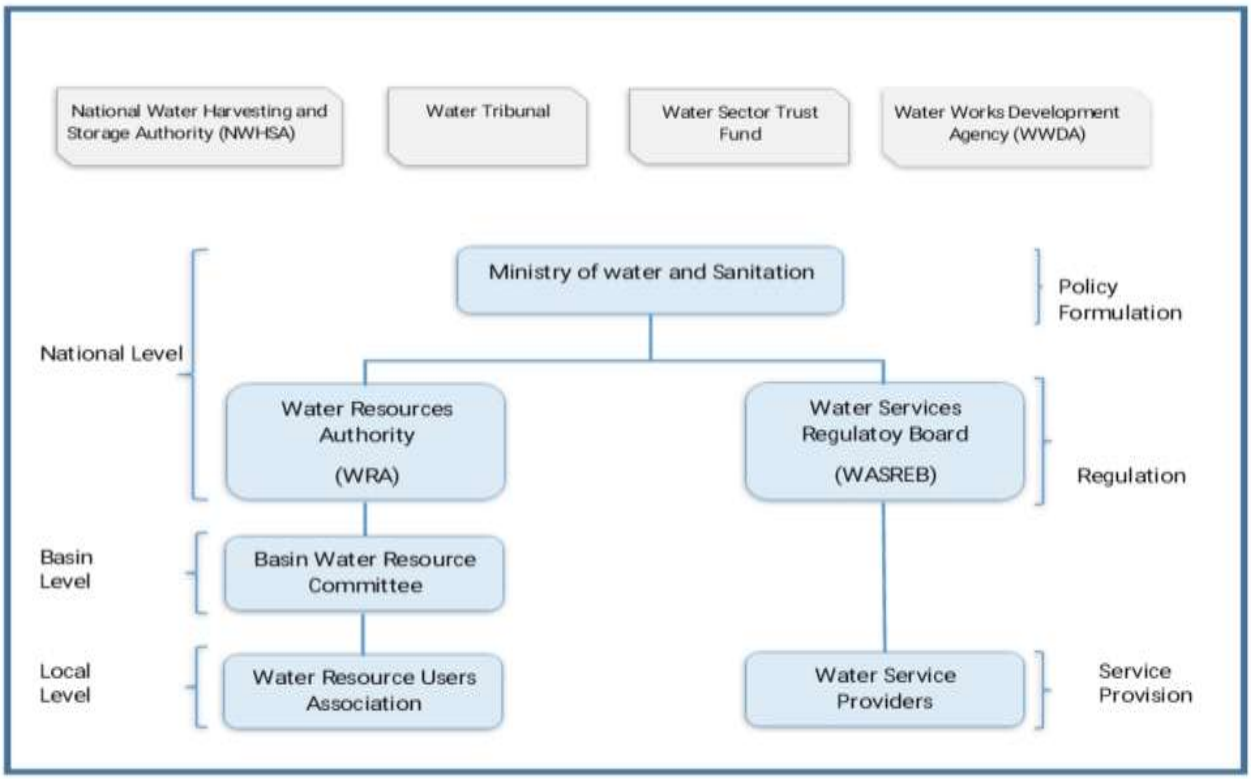
All the institutions that existed in the Water Act, 2002 were retained. With the exception of the Water Services Regulatory Board and the Water Resources Users Associations the rest were renamed e.g. Water Resources Management Authority is the Water Resources Authority, Catchment Area Advisory Committees named the Basin Water Resources Committee, the Water Services Boards named the Water Works Development Agency, the Water Services Trust Fund is the Water Sector Trust Fund and the Water Appeals Board to the Water Tribunal. The Water Act, 2016 further establishes one new institution, the National Water Harvesting and Storage Authority. Figure 4.1 and 4.2 present a diagrammatic representation of the water institutions under the Water Act of 2002 and 2016 respectively and the relationships envisioned in the Act.

Figure 4.1 Water institutions in Water Act, 2002



Source: Ministry of Water and Irrigation (MWI) (2005)

Figure 4.2 Water institutions in Water Act, 2016



Source: Author, 2020

a. Ministry of Water and Sanitation

In the Water Act, 2002, the Ministry of Water was tasked with policy development, sector coordination, monitoring and supervision to ensure; equitable and effective water and sewerage services in the country, sustainability of water resources and development of water resources for irrigation, commercial, industrial, power generation and other uses. The Water Act, 2002 empowered the Minister of Water to undertake several functions relating to the water sector including the formulation and review of the national water services strategy which included information on existing water service provision, coverage, planned expansions and investments in the water sector. The Minister had powers to supply water services to consumers through the National Water Conservation and Pipeline Corporation (NWCPC) in situations where Water Service Providers (WSPs) had not been identified for supply of water to a specific area or has been declared to have defaulted by WASREB or in cases of emergency.

In the Water Act, 2016, the Cabinet Secretary (CS) responsible for water and sanitation plays a critical role as was the case for the Minister under the Water Act 2002. The CS is required to formulate a national water resource management strategy every five years. The strategy is required to contain "the government's plans and programs for the protection, conservation, control and management of water resources." In addition, the CS is required to issue an annual report on the state of national water resources. Section 64 of the Water Act, 2016 requires the CS to develop a water services strategy every five years. The strategy should contain information relating to the existing water services, data on people not served by appropriate water and sanitation services, "standards for progressive realization of right to water" and resource mobilization strategy. The CS also has other powers such as appointment of members of the boards of the Water Services Regulatory Board, the Water Resources Authority and the Basin Committees.

In addition, the Water Act, 2002 gave a prominent role to the public in the development of the national water strategy with the Minister having been required to consult the public on the content of the strategy before gazetting the final strategy. In addition, the Water Act 2002 required not only public participation and consultations in decisions affecting them but also created platforms for public participation in the enhancement of service delivery in the water sector. The Water Action Groups (WAGs) and Water Resources Users Associations (WRUAs)

were created to support consumers to organize themselves in order to increase public participation in the decision-making process. Similarly, the Water Act 2016 embodies the constitutional requirement for public participation in decision-making processes for the water sector by requiring public consultations in the development of water resources management strategy and the water services strategy and retaining the use of the Water Resources Users Associations.

b. Water Resources Management Authority (WARMA) and the Water Resources Authority

In the Water Act, 2002, WARMA was responsible for all aspects of water resource management. This included water allocation, source protection and conservation, water quality management and pollution control. WARMA was tasked with the implementation of policies and strategies relating to management of water resources and the development of catchment level management strategies. The Authority was required to work with stakeholders and the general public in developing a water resource management strategy. Within the country-wide network of the Authority, catchment area committees were created to advice on water resources conservation, use and apportionment, adjustment of grants, and cancellation or variation of water permits. The establishment and operation of water users' associations was encouraged and facilitated as fora for conflict resolution and co-operative management of water resources in catchment areas.

Table 4.2 classifies the authority's roles as envisioned in the Water Act, 2002, into political, economic, social and environmental based on the role and what the authority is required to consider in executing each role.

Table 4.2 Water Resources Management Authority roles in the Water Act, 2002

Social roles	Political roles	Economic roles	Environmental roles
Receiving and determining applications for permits for water use. This was subject to; public consultation, the likely effect of the proposed water use on the water resource and on other water users, giving domestic water use precedence over the use of water for any other purpose, reasonable and beneficial use in relation to other users and the quality of water in the water resource which may be required for the reserve.	Developing principles, guidelines and procedures for the allocation of water resources including; the national water resource management strategy made in a participatory manner, the Catchment management strategy and the resource quality objectives of the water resource.	Receiving and determining applications for permits for water use. In the determination WARMA was meant to consider; efficient and beneficial use of water in the public interest, the investments already made and to be made by the water user in respect of the water use in question, the strategic importance of the proposed water use, reasonable and beneficial nature and degree of water use in relation to others who use same sources of supply or bodies of water and the probable duration of the activity or undertaking for which a water use is to be authorized.	Receiving and determining applications for permits for water use. In the determination WARMA was meant to consider; the likely effect of the proposed water use on the water resource and the probable duration of the activity or undertaking for which a water use is to be authorized
Monitoring and enforcing the conditions attached to permits for water use. WARMA was to change or discontinue the permit in the event of inequity or shortage for domestic use.	Monitoring, and from time to time reassessing, the national water resources management strategy.	Monitoring and enforcing the conditions attached to permits for water use. WARMA could change permit in the event of inequity or shortage of water for any other purpose that should have priority.	Monitoring and enforcing the conditions attached to permits for water use. Environmental Impact Assessment was to be done and permit changed in the event of deterioration of quality of water.

Social roles	Political roles	Economic roles	Environmental roles
Appointing such officers and other staff as may be necessary for the exercise and performance of its powers and functions. Human resources included the Chair of the board in addition to ten members who were given the power to recruit the CEO, chief officers and other staff.	Gathering and maintaining information on water resources and from time to time publishing forecasts, projections and information on water resources.	Determining charges to be imposed for the use of water from any water resource in accordance with guidelines in the national water resources management strategy.	Regulating and protecting water resources quality from adverse impacts including conservation of ground water with public consultation.
	Liaising with other bodies for the better regulation and management of water resources	The Authority, with the approval of the Minister and the Treasury, could retain in a fund managed by it some or all of the revenue from water use charges payable under a permit, to be applied by the Authority in meeting costs incurred in the performance of its functions.	Managing and protecting water catchments including recommending protected areas to be gazzetted.
	Advising the Minister concerning any matter in connection with water resources.		

Source: Author, 2020

Section 11 of the Water Act, 2016 retains WARMA, but renames it Water Resources Authority. The Authority is mandated to regulate management and use of water resources. It also has a coordinating role with power to coordinate with regional, national and international bodies in management and use of water resources. In addition, the Authority is the regulatory institution

on use and management of water resources empowered to enforce regulations and issue permits for use of water resources. Table 4.3 classifies each of the authority's roles into political, economic, social and environmental based on the role and what the authority is required to consider in executing each role as envisioned in the Water Act, 2016.

Table 4.3 Water Resources Authority roles in the Water Act, 2016

Social roles	Political roles	Economic roles	Environmental roles
Regulating the management and use of water resources.	Formulating and enforcing standards, procedures and regulations for the management and use of water resources and flood mitigation.	Regulating the management and use of water resources.	Regulating the management and use of water resources. Declare catchment areas as a protected area. Impose such requirements or regulate or prohibit such conduct or activities, in or in relation to the protected catchment area considered necessary for the protection of the area and its water resources.
Receiving water permit applications for water abstraction, water use and recharge. Determining, issuing and varying water permits. Enforcing the conditions of those permits.	Providing information and advice to the Cabinet Secretary for formulation of policy on national water resource management, water storage and flood control strategies.	Receiving water permit applications for water abstraction, water use and recharge. Determining, issuing and varying water permits. Enforcing the conditions of those permits.	Receiving water permit applications for water abstraction, water use and recharge. Determining, issuing and varying water permits. Enforcing the conditions of those permits.
Appointing such officers and other staff as may be necessary for the exercise and performance of its powers and functions.	Coordinating with other regional, national and international bodies for the better regulation of the management and use of water resources.	Collecting water permit fees and water use charges. Determining and setting permit and water use fees.	Coordinating with other regional, national and international bodies for the better regulation of the management and use of water resources.

Social roles	Political roles	Economic roles	Environmental roles
Establishing Basin water resources committees	Advising the Cabinet Secretary on management and uses of water resources.		
The Authority shall prescribe the criteria for classifying water resources for the purpose of determining water resources quality objectives for each class of water resource.	The Authority shall prescribe the criteria for classifying water resources for the purpose of determining water resources quality objectives for each class of water resource.	The Authority shall prescribe the criteria for classifying water resources for the purpose of determining water resources quality objectives for each class of water resource. The prescribed classification criteria shall take into account strategic functions served by the water resource.	The Authority shall prescribe the criteria for classifying water resources for the purpose of determining water resources quality objectives for each class of water resource. This entails considering ecological functions of the water resource and vulnerability to degradation or depletion and other related factors.
	Establish a National monitoring and information system		

Source: Author, 2020

A number of changes can be seen in the roles of the Authority between the 2002 and 2016 Act. There is an expansion of the scope of permits i.e. permits given by the authority do not only cover water use as envisioned in the Water Act, 2002 but include water abstraction and recharge in the Water Act, 2016. In addition, the formulation and enforcement of standards, procedures and regulations for the management and use of water resources have been expanded in the Water Act, 2016 to include flood mitigation which was not covered in the Water Act, 2002.

In the Water Act, 2016, the authority no longer has the role of monitoring and re-assessing the national water resources management strategy which is now assigned to the Cabinet Secretary in charge of water and sanitation. In line with this, WRA is now allocated the role of providing information and advice to the Cabinet Secretary for formulation of policy on national water resource management, water storage and flood control strategies.

The Water Act, 2016 caters for water resource management at the County level. Sections 24 to 26 of the Water Act, 2016, provides for the creation of Basin Water Resources Committee (Basin Committee) where counties are represented. It is within the context of the work of the Basin Committee that counties discharge their resource management functions. The Basin Committees are appointed by the Cabinet Secretary and shall be responsible for the management of water resources in their basin areas, which shall be defined by the Cabinet Secretary. The Basin committees are required to develop a "basin area water resources management strategy" containing the strategy for allocation, management and protection of water resources in the respective basin area. The Basin Committees might also contract water user associations to perform functions relating to water resource management.

The authority has the key role of coordinating with other regional, national and international bodies for the better regulation of the management and use of water resources and maintain a national monitoring and geo referenced information system on water resources.

Water Act, 2002 gave WARMA the powers to "undertake the prosecution of any offences arising under the Act or in connection with the performance of its functions". Section 12 (a) of the Water Act, 2016 under the function of WRA states that it shall "formulate and enforce standards, procedures and Regulations for the management and use of water resources and flood mitigation". Section 12 (c) further states that the Authority shall enforce regulations made under this Act and 12 (d) states that it will "receive water permit applications for water abstraction, water use and recharge and determine, issue, vary water permits; and enforce the conditions of those permits". In the enforcement mechanism the Water Act, 2016 provides for prosecution. The Water Act, 2016 states that "Without prejudice to the rights of any person to bring proceedings in respect of an offence under this Act, and subject to Article 157 of the Constitution, the Authority, the Regulatory Board, a county government executive or a licensee may institute and maintain criminal proceedings in any court against any person accused of an offence under this Act or under any Regulations or Regulations made under this Act".

WARMA has an accountability role that require it to; keep all proper books and records of account of the income, expenditure, assets and liabilities and prepare an annual report of its

work and activities within 3 months after the end of each financial year. On payment of the prescribed fee, any member of the public can have access to information contained in any national information system and shall be supplied with a copy of the Authority's annual report.

c. Water Services Regulatory Board

The Water Act, 2002, established the Water Services Regulatory Board (WASREB) which was responsible for the regulation of water and sewerage services including licensing, quality assurance, and issuance of guidelines for tariffs and prices and dispute resolution. WASREB was further tasked with overseeing the implementation of policies and strategies relating to provision of water services and approving and issuing licenses to appointed water service providers, determining water standards and monitoring water quality, developing standards and guiding on cost effective management of water service provision including tariff setting and monitoring the performance of water services boards and water service providers.

WASREB was also empowered under the law to prosecute offences arising under the law relating to its functions. One of the more important functions by WASREB was maintenance of a national monitoring and information system on water services. In this role WASREB oversees a system for collection and management of data regarding water services. To implement this, WASREB was empowered to request necessary information regarding water services from any person within a reasonable time. Table 4.4 classifies WASREB's specific roles into political, economic, social and environmental.

Table 4.4 Water Services Regulatory Board's roles in the Water Act, 2002

Social roles	Political roles	Economic roles	Environmental roles
Determining standards for the provision of water services to consumers.	Liaising with other bodies for the better regulation and management of water services	Issuing licenses for the provision of water services and ensuring that the WSPs have technical and financial capacity, performance targets and a plan for provision of affordable and sustainable service.	Promoting water conservation and demand management measures.
Establishing procedures for handling complaints made by consumers against licensees.	Gathering and maintaining information and publishing forecasts, projections and information on water services.	Monitoring compliance with established standards for the design, construction, operation and maintenance of facilities for water.	
Monitoring compliance with established standards for the design, construction, operation and maintenance of facilities for water.	Monitoring, and from time to time reassessing, the national water services strategy	Monitoring and regulating licensees and enforcing license conditions.	
Monitoring and regulating licensees and enforcing license conditions.	Disseminating information about water services.	Developing guidelines for the fixing of tariffs for the provision of water services	
Developing guidelines for the fixing of tariffs for the provision of water services		Developing guidelines for and advising on the cost-effective and efficient management and operation of water services	
Advising licensees on procedures for dealing with complaints from consumers and to monitor the operation of these procedures.		Monitoring the operation of agreements between water services boards and water service providers and to take appropriate action to improve their effectiveness.	

Social roles	Political roles	Economic roles	Environmental roles
Developing guidelines on regulations for the provision of water services to be adopted by licensees.	Advising the Minister concerning water services	Determining fees, levies, premiums and other charges to be imposed for water services in accordance with the national water services strategy. WASREB, with the approval of the Minister and the Treasury can retain in a fund managed by it some or all of the revenue from license fees, to be applied by the Regulatory Board in meeting costs incurred in the performance of its functions.	
Disseminating information about water services.		Developing model performance agreements for use between licensees and water service providers.	
Staffing provisions including the board, CEO, principal officers, officers and other staff.			

Source: Author, 2020

Section 70 of the Water Act, 2016 establishes the Water Services Regulatory Board with the role of protecting "the interest and rights of consumers in the provision of water services." Section 72 sets out the regulatory functions of the board which include the formulation and monitoring of national standards for water service provision, recommending and approval of water tariffs, licensing and monitoring of water service providers, consumer complaint and monitoring of implementation of the water services strategy. Table 4.5 classifies each of the Regulatory Board's roles into political, economic, social and environmental as envisioned in the Water Act, 2016.

Table 4.5 Water Services Regulatory Board's roles in the Water Act, 2016

Social roles	Political roles	Economic roles	Environmental roles
Monitoring and regulating licensees and enforcing license conditions.	Determining and prescribing national standards for the provision of water services and asset development for water services providers.	Evaluating and recommending water and sewerage tariffs to the county water services providers and approving the imposition of such tariffs in line with consumer protection standards.	Monitoring and regulating licensees and enforcing license conditions.
Establishing a mechanism for handling complaints from consumers regarding the quality or nature of water services.	Advising the Cabinet Secretary on the nature, extent and conditions of financial support to be accorded to water services providers for providing water services.	Setting license conditions and accrediting water services providers.	Monitoring compliance with standards including the design, construction, operation and maintenance of facilities for the provision of water.
Developing guidelines on the establishment of consumer groups and facilitating their establishment.	Monitoring progress in the implementation of the water Strategy and make appropriate recommendations	Monitoring and regulating licensees and enforcing license conditions	Inspecting water works and water services to ensure that such works and services meet the prescribed standards
Making recommendations on how to provide basic water services to marginalized areas.	Advising the Cabinet Secretary on any matter in connection with water services.	Developing a model memorandum and articles of association to be used by all water companies applying to be licensed by the Regulatory Board to operate as water services providers.	
Maintaining a national database and information system on water services.	Maintaining a national database and information system on water services.	Making regulations on water services and asset development for efficient and effective water services.	

Social roles	Political roles	Economic roles	Environmental roles
Reporting annually to the public on issues of water supply and sewerage services and the performance of relevant sectors and publishing the reports in the Gazette.	Reporting annually to the public on issues of water supply and sewerage services and the performance of relevant sectors and publishing the reports in the Gazette	Inspecting water works and water services to ensure that such works and services meet the prescribed standards	
Evaluating and recommending water and sewerage tariffs to the county water services providers and approving the imposition of such tariffs in line with consumer protection standards			

Source: Author, 2020

As opposed to the Water Act, 2002, in addition to determining standards for the provision of water services to consumers, the Water Act, 2016 has expanded the role of the Board to include determining and prescribing national standards for asset development for water service providers. This is a role not initially envisioned in the Water Act, 2002. Even though WASREB was tasked with monitoring compliance with established standards for the design, construction, operation and maintenance of facilities for water services it was not clear who established them. This monitoring role further prescribes the scope of WASREB's monitoring of compliance with established standards for the design, construction, operation and maintenance of facilities for water services to WWDA's and WSPs as opposed to the Water Act of 2002 which was not specific on the institutions.

The role of liaising with other bodies for the better regulation and management of water services and promotion of water conservation and demand management measures envisioned in the Water Act, 2002 is not allocated in the Water Act, 2016. The Act, however, provides for the regulatory board to work with the county governments in enforcing certain regulatory requirements including terms of service provision by the WSPs. In this regard, the regulatory board may consult the county government in imposing special regulatory regime on a licensee who contravenes requirements of license. County governments also have a general obligation

"to monitor and enforce" applicable regulations developed under the Act. Where failure is noted, the regulatory board may make such orders to the county government executive concerned, to take required action. County governments also have the power, after consultation with the regulatory board, to reduce, dispense with regulations that the county government considers "unreasonable" in a particular case.

In the Water Act, 2016 a number of new roles are introduced including; providing recommendations on how to provide basic water services to marginalized areas; developing guidelines on the establishment of consumer groups and facilitating their establishment; advising the Cabinet Secretary on the nature, extent and conditions of financial support to be accorded to water services providers for providing water services and monitoring progress in the implementation of the water strategy and making appropriate recommendations.

A major shift in the Board's roles is the direct responsibility of the water service providers (WSPs) as opposed to the Water Act, 2002 where they were under the Water Services Board. The Water Act 2016 continues with the use of private WSPs to implement actual water and sanitation service provision. However, applications for licensing of the WSPs is to be made to the regulatory board with a copy of application submitted to county government of the area the WSP intends to serve. The law requires the regulatory board to take into consideration the views of stakeholders including the county governments, however, the county governments are not provided the powers to veto the licensing. In addition, whereas section 77 provides for the establishment of WSPs by the county governments, the decision on the numbers of the WSPs to operate and jurisdiction of supply area, is determined solely by the regulatory board.

The regulatory board is also required to develop guidelines to regulate the conduct of the WSPs. Where the WSP breaches the guidelines, ceases to meet criteria set for licensing, becomes insolvent, fails to provide services or comply with the conditions of licensing, the regulatory board may suspend or revoke such the license of the WSP concerned. The regulatory board will define the area within which the WSPs will provide water services. However, the law requires the regulatory board to consider commercial viability and shall not prescribe to a WSP an area less than required for commercial viability. In addition, the regulatory board may permit clustering of WSPs to provide water services within a specified area with a view to improving

efficiency and commercial viability. In this regard, the regulatory board may order joint service provision or transfer of water service license with a view to securing commercial viability. Further, whereas an ideal scenario would limit the area of operation for WSP to the boundary of a county, a license granted to WSP may cover more than one county. Where a WSP contravenes license requirements, a special license regime may be imposed or transfer function of water service provision to another license holder.

Under the function assigned to WASREB, the Water Act, 2016 requires public consultation in the development of guidelines and regulatory standards, appointment of WSPs, applications for licenses. The general public also enjoys the right to information regarding the water service provision whereby details of WSP are to be made available to the public for purposes of scrutiny. WSPs intending to restrict water supply are also required to place details of such restriction in the local media.

Water Act, 2002 gave WASREB the powers to "undertake the prosecution of any offences arising under the Act or in connection with the performance of its functions". Similarly, the Water Act, 2016 states that "Without prejudice to the rights of any person to bring proceedings in respect of an offence under this Act, and subject to Article 157 of the Constitution, the Authority, the Regulatory Board, a county government executive or a licensee may institute and maintain criminal proceedings in any court against any person accused of an offence under this Act or under any Regulations or Regulations made under this Act".

WASREB has a number of accountability roles. It is expected to keep all proper books and records of account of the income, expenditure, assets and liabilities and is required to prepare an annual report of its work and activities within three months after the end of each financial year. On payment of the prescribed fee, any member of the public can have access to information contained in any national database and information system and shall be supplied with a copy of the Board's annual report.

d. Water Services Boards (WSB) and Water Works Development Agency

In the Water Act, 2002, the Water Services Boards (WSBs) were responsible for the efficient and economical provision of water and sewerage services within their area of jurisdiction in

accordance with the national water services strategy and under the regulation of the Regulatory Board. WSBs were responsible for planning for improvement in provision of water supply and sewerage services, appointment and contracting water service providers and an asset holder of central government facilities.

The responsibility of providing water and sanitation services was vested in the WSBs. The WSBs were established by the Minister and licensed by WASREB. The WSBs were tasked with the responsibility of developing water systems in their areas of jurisdiction and supplying water and sanitation services. However, section 53 as read with section 55 requires the WSBs not to provide water services directly, but through "the licence by one or more agents, to be known as water service providers" in the area jurisdiction of the respective WSBs after appropriate licensing from WASREB.

Section 55 of the Water Act, 2002 requires that the arrangement between the WSBs and the WSPs be in writing, which is referred to as Service Provision Agreements. Technically, the WSB might enter into an agreement with one or more suppliers in respect of the area of supply or may also assist WSPs within a specified territory. The WSPs could have been community groups, Non-Governmental Organizations, or autonomous entities established by local authorities or other persons. All WSPs were required by law to get approvals to provide water and sanitation services in the area of jurisdiction of the WSB, before being formally licensed to provide the service. Since legally, the WSBs had the mandate of providing water services, the WSPs were to enter into a licensing agreement with the WSBs determine the scope of services and where applicable define the territory or area of service provision. In turn, the WSPs would pay annual license fees and lease fees for using infrastructure of the WSBs. Since the WSBs mandate is providing water services to consumers, their roles focus more on the social and economic aspects, as summarised in Table 4.6.

Table 4.6 Water Services Board's roles in the Water Act, 2002

Social roles	Economic roles
Staffing provisions including the Board, CEO appointed by the Board and officers and other staff.	Responsible for the efficient and economical provision of water services.
	Provision of Water services in circumstances where the Regulatory Board is satisfied that the procurement of such an agent is not possible or that the provision of such services by an agent is not practicable.
	For the purpose of the provision of water services; purchase, lease or otherwise acquire, on such terms as the Minister may approve, premises, plant, equipment and facilities or land

Source: Author, 2020

Section 65 of the Water Act, 2016 empowers the Cabinet Secretary to establish one or more "waterworks development agencies and define geographical area of jurisdiction for each such agency". Each agency is a body corporate with an independent board and management. As a result the following eight WWDAs were formed; Athi Water Works Development Agency, Coast Water Works Development Agency, Lake Victoria North Water Works Development Agency, Lake Victoria South Water Works Development Agency, Northern Water Works Development Agency, Rift Valley Water Works Development Agency, Tana Water Works Development Agency and the Tanathi Water Works Development Agency. Although section 67 requires the CS to consult with stakeholders in development of criteria for establishment of the Water Works Development Agencies, it is the prerogative of the Cabinet Secretary.

The functions of the agencies as provided in section 68 of the Water Act, 2016 include the "development, maintenance and management of national public water works" a function similar to that contemplated to be undertaken by the National Water Harvesting and Storage Authority under section 8 "undertake on behalf of the national government, the development of national public water works for water resources storage and flood control".

In addition, the agencies are empowered to operate water works and "provide water services as a water service provider until such a time as responsibility for the operation and management of

the water works are handed over to a county government, joint committee, and authority of county governments or water service provider". In terms of water service provision, the agencies are to provide "reserve capacity for purposes of providing water services" in situations where a license of an existing WSP is withdrawn and functions yet to be transferred to another WSP. Table 4.7 summarised the roles of the Water Works Development Agency.

Table 4.7 Water Works Development Agency roles in the Water Act, 2016

Social roles	**Political roles**	**Economic roles**	**Environmental roles**
Providing reserve capacity for purposes of providing water services where WASREB orders the transfer of water services functions from a defaulting WSP to another licensee.	Providing the Cabinet Secretary with technical support in the discharge of his or her functions under the Constitution and this Act.	Operating the waterworks and provide water services as a water service provider, until such a time as responsibility for the operation and management of the waterworks are handed over to a county government, joint committee, authority of county governments or water services provider.	Undertaking the development, maintenance and management of the national public water works within its area of jurisdiction.
Providing technical services and capacity building to such county governments and water services providers as may be requested.		Undertaking the development, maintenance and management of the national public water works within its area of jurisdiction.	
Operating the waterworks and providing water services as a water service provider, until such a time as responsibility for the operation and management of the waterworks are handed over.			

Source: Author, 2020

The Water Services Boards had a major shift in their functions or mandate. While in the Water Act, 2002 Water Services Providers were agents of the Water Services Regulatory Boards and the Water Services Board were responsible for the efficient and economical provision of water services authorised by the licence, this role is not assigned to the Water Works Development Agencies since in the Act of 2016 as it was shifted to WASREB.

The Water Works Development Agencies are also assigned the role of; providing technical services and capacity building to such county governments and water services providers within its area as may be requested; and providing to the Cabinet Secretary technical support in the discharge of his or her functions under the Constitution and this Act. These roles did not apply to the Water Services Boards or any other agency in the Water Act, 2002.

In both Acts, however, the Water Services Boards and the Water Works Development Agencies can provide water services in cases where a WSP is not identified.

e. Water Services Trust Fund and Water Sector Trust Fund

The Water Act 2002 established a fund known as the Water Services Trust Fund (WSTF) managed by trustees appointed by the Minister. The Water Services Trust Fund (WSTF) was responsible for assisting in financing the provision of water services to areas without adequate water services or are inadequately provided for. It was established under the law with a view to encourage provision of resources and financing for development of water infrastructure largely to rural areas that were not attractive for private sector investment due to non-commercial viability of the areas. The fund consists of funds allocated by parliament, donations, grants and other monies payable to the fund. Table 4.8 classifies WSTF's specific roles into political, economic and social roles.

Table 4.8 Water Services Trust Fund roles in the Water Act, 2002

Social roles	Political roles	Economic roles
The Fund was to be managed by trustees from time to time appointed and holding office under a trust deed, to be drawn up by the Minister.	The trustees developed and applied principles governing the grant of moneys from the Fund and for achieving the object of the Fund.	Assist in financing the provision of water services to areas of Kenya which are without adequate water services. The fund held; such moneys as were appropriated by parliament for the purposes of the Fund; such moneys as were received by the Fund from donations, grants, and bequests from whatever source; and such other moneys as were, by or under any Act, payable to the Fund.

Source: Author, 2020

Section 113 of the Water Act, 2016 retained the fund as the Water Sector Trust Fund (WSTF). The object of the Fund is to provide conditional and unconditional grants to counties, in addition to the Equalisation Fund and to assist in financing the development and management of water services in marginalized areas or any area which is considered by the Board of Trustees to be underserved including; community level initiatives for the sustainable management of water resources; development of water services in rural areas considered not to be commercially viable for provision of water services by licensees; development of water services in the under-served poor urban areas; and research activities in the area of water resources management and water services, sewerage and sanitation. Table 4.9 classifies its roles into economic, social, political and environmental roles.

Table 4.9 Water Sector Trust Fund roles in the Water Act, 2016

Social roles	Political roles	Economic roles	Environmental roles
Implementing measures to ensure the efficient and equitable sharing of the resources of the fund giving priority to resource allocation in; rural and urban areas where access to basic water services is below the national average; and rural areas which are vulnerable to the degradation or depletion of water resources.	Formulating and implementing principles, regulations and procedures in consultation with the national government and county governments for financing projects, including efficiency and effectiveness of funds.	Managing the resources of the Fund. Mobilizing additional resources for the Fund. Implementing measures to ensure the efficient and equitable sharing of the resources of the fund.	Collaborating with relevant institutions to develop incentive programmes for water resources management including disaster management, climate change adaptation and mitigation.
Maintaining and making publicly available information on the projects financed and impact of such projects.	Maintaining and making publicly available information on the projects financed and impact of such projects.	Establishing and managing subsidiary funds as may be necessary for sustainable financing towards water services and water resource management.	
		Receiving grants for onward lending to WSPs, counties, and registered community schemes towards water services and water resources management projects for the underserved areas and urban poor.	

Source: Author, 2020

In the Water Act, 2016 the WSTF has powers to implement the funds under its control including through onward lending to WSP, "water resource management projects" and county governments. As such, it is not mandatory for the WSTF to channel funds under its control to the county governments only. Section 117 describing sources of the fund include funding allocated by parliament "from the national budget".

f. Water Appeals Board and the Water Tribunal

Section 84 of the Water Act 2002 established a Water Appeals Board. The Water Appeals Board was responsible for the determination of appeals and disputes and adjudicating disputes between sector players. Its decision was to be final, except where an appeal would lie in the High Court. An appeal would lie to the Water Appeals Board at the suit of any person having a right or proprietary interest which is directly affected by a decision or order of the Authority, the Minister or the Regulatory Board concerning a permit or license under this Act, and the Board shall hear and determine any such appeal. The roles of the Appeals Board cut across the political social, economic and environment roles since it determines matters that cut across these roles.
Section 119 of the Water Act, 2016 established a Water Tribunal. The Tribunal shall hear and determine appeals at the instance of any person or institution directly affected by the decision or order of the Cabinet Secretary, the Authority and Regulatory Board or of any person acting under their authority.

The Tribunal has also general powers of dispute resolution regarding disputes "concerning water resources or water services". As such, the functions of the Tribunal are broader than those assigned to the Water Appeals Board under the Water Act 2002. The Tribunal also serves under the Judicial Service Commission (JSC) and not under the Ministry of Water and Sanitation like the Water Appeals Board under the Water Act, 2002.

g. National Water Harvesting and Storage Authority

Section 30 of the Water Act, 2016 established the National Water Harvesting and Storage Authority. The function of the Storage Authority are; to undertake the development, management and maintenance of national public works for water resources storage and flood control; maintain and manage national public water works infrastructure for water resources storage and develop a water harvesting policy and enforce water harvesting strategies. It is also tasked with the collection and provision of information for the formulation by the Cabinet Secretary of the national water resources storage and flood control strategies; undertaking on behalf of the national government strategic water emergency interventions during drought; and advising the Cabinet Secretary on any matter concerning national public water works for water storage and flood control. Table 4.10 classifies the Authority's specific roles into political, economic, social and environmental.

Table 4.10 National Water Harvesting and Storage Authority roles in the Water Act, 2016

Social roles	Political roles	Economic roles	Environmental roles
Undertaking on behalf of the National Government strategic water emergency interventions during drought.	Developing a water harvesting policy and enforcing water harvesting strategies.	Undertaking the development, maintenance and management of national public water works for water resources storage and flood control.	Undertaking on behalf of the national government strategic water emergency interventions during drought.
Human resource provisions for the Authority i.e. Board whose chair is appointed by the president, a CEO appointed by the Cabinet secretary, chief officers and other relevant staff.	Advising the Cabinet Secretary on any matter concerning national public water works for water storage and flood control.	Maintaining and managing national public water works infrastructure for water resources storage.	
	Collect and provide information for the formulation by the Cabinet Secretary of the national water resources storage and flood control strategies		

Source: Author, 2020

4.3 Gaps in the regulatory framework in the water sector

a. Regulatory gap

The Water Act, 2016 establishes two regulatory organizations, WRA and WASREB, it however fails to clearly outline how the Water Works Development Agencies and the National Water Harvesting and Storage Authority will be regulated under this framework. These being institutions that are responsible for development of national water works, this gap in their regulation could be problematic.

> "The Water Works Development Agencies develop assets but are not under regulation by WASREB or WRA. This creates a challenge in ensuring the quality of water services." WASREB Official.

A WASREB official further indicated that in some instances the National Water Harvesting and Storage Authority think that they can supply water in bulk. This is, however, prohibited by section 100 (1) which states that "a person shall not supply water in bulk to a water services provider without a licence issued by the Regulatory Board."

b. Overlapping roles

There exist potential overlaps between the roles of the WWDAs and Water Harvesting and Storage Authority in terms of development of national public works. Each WWDA is mandated to "undertake the development, maintenance and management of the national public water works within its area of jurisdiction" and the Harvesting Authority has the mandate to "undertake on behalf of the national government, the development of national public water works for water resources storage and flood control". The Water Act, 2016 fails to clearly articulate how these two institutions will collaborate or complement each other's roles to ensure the seamless execution of their mandate.

c. Collaborative roles

The Act further fails to assign collaboration or liaising roles in various instances. In the Water Act, 2016, WASREB is not expressly assigned the role of liaising with other institutions in the execution of its mandate as was done in the Water Act, 2002 which stated that it should "liaise with other bodies for the better regulation and management of water services". While there exist other sectors and institutions which perform functions that are relevant to the water sector and require collaborative efforts, the Water Act, 2016 fails to envision how these institutions will collaborate with those established in the Act. These include Kenya Forest Service, National Environmental and Management Authority and the Ministry of Environment and Forestry. With the exception of the Water Sector Trust Fund where the Water Act, 2016 states the Fund will be tasked with formulating and implementing principles, regulations and procedures in consultation with the national government and county governments for financing projects, including efficiency and effectiveness of funds, minimal collaboration is envisioned for the other institutions.

4.4 Challenges in implementing the water regulatory framework

a. Funding challenges

Financing remains a challenge given the scarcity of resources and competing priorities within the Country. One respondent indicated that under the Water Act, 2016 their mandate was expanded, and funding has not yet expanded to match the functions given therefore leaving them with funding gaps.

> "Ideally we require approximately Kenya shilling 100 billion annually, we however, receive about Kenya shilling 40 billion yet initially we were responsible for eight Water Services Boards and now we are directly licencing about ninety Water Service Providers." WASREB official.

> A WRA official stated that "Given that financial resources are scarce and have to be distributed among different sectors, we have a financial shortage."

b. Regulatory Challenges

The officials from WASREB and WRA indicated that Counties in some instances feel like there should be no regulation from National institutions on the service providers as they deem it an interference with one of the functions that has been allocated to Counties. This has presented a specific challenge to WASREB in the management of water service providers since in the view of the county governments, as per the Constitution of Kenya 2010, regulation of water services is a power or function that concurrently lies with county governments and the national government. Alternatively, Counties have argued that it is not prudent to have authority to provide a specific service without the attendant power of regulation suggesting that they should regulate service providers.

c. Coordination Challenges

Water service providers in some instances due to a number of institutions at the National level are subjected to a number of levies e.g. from WASREB and the National Environmental Management Authority (NEMA). These levies present a challenge in the setting of tariffs as they result in a rise in the cost of provision of services hence impacting on the charges translated to water users.

CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

This chapter discusses the findings of the study, outlines the conclusions and presents the recommendations.

5.1 Discussion of the findings

This section discusses the regulatory framework, institutional roles and how they have evolved between 2002 and 2017, gaps in Kenya's water sector institutional and regulatory Framework and the challenges experienced by the institutions in implementing the mandates in the regulatory framework.

5.1.1 Water sector regulatory framework

The Constitution of Kenya, 2010 reorganised a number of government functions based on the establishment of two levels of governments with separate functions which required cooperation and interdependence in service deliver. The fourth schedule of the constitution distributed functions between the National government and the County governments. With respect to the water sector, the responsibility of supply of water and sanitation was assigned to the county governments.

The constitution required the transfer of functions from the hitherto centralized government structure to the county governments where such functions were allocated to the county governments. This was required to be followed by movement and allocation of resources to the county governments to undertake the functions. This distribution of functions ensures that each level of government is clear on the functions that they are responsible for and therefore prevents potential clashes in the execution of their functions which may result in inefficiencies in water service provision and water resource management.

The Constitution led to the revision of the Water Act of 2002 to align it with the provisions in the constitution. This according to Saleth and Dinar (2000) is an exogenous drive. It differs from; the United States of America water policy which changed due to highly fragmented policy making environment with multiple agencies that had resulted in an increasingly volatile and highly contested water landscape (Gerlak, 2006), and the European Union where it was due to the increasing complexity of water resource management, the increasing number of actors and

institutions involved in the process and the newly vested economic interests in water supply (Kaika, 2003). It however can be likened to Mexico's scenario where Saleth and Dinar (2000) found that water sector changes was towards decentralization and privatization initiatives.

In the Constitution of Kenya, 2010, water is recognized as a human right in line with the United Nations General Assembly declaration of safe and clean water and sanitation a human right essential for the full enjoyment of life and all other human rights (United Nations General Assembly, 2010). This recognition ensures that countries work towards ensuring that their populations have access to water required for human survival. The social aspect of water governance as envisioned by Camkin and Neto (2016) should cater for recognition of water as a human right as done in the Constitution of Kenya, 2010.

Further, water is held in trust by the National Government. This aids in ensuring that equity is maintained, and a locality or community does not get advantage over others in terms of access given their proximity to the water body or its existence in a particular County Government's jurisdiction. This is in line with Jacobi, De Stefano, López-Gunn, Solanes, Delacámara, Marín, Embid, Empinotti, Blanco, Donoso, Rica, Uribe and Jiménez (2014) who stated that in most legal systems, water belongs to the public domain of the State with it having public ownership and control.

Governing water includes; the formulation, establishment and implementation of water policies, legislation and institutions, and clarification of the roles and responsibilities of government, civil society and the private sector in relation to water resources and services (UNDP-SIWI Water Governance Facility , 2016). The Water Act, 2016 is the instrument that provides for management, conservation, use and control of water resource in Kenya after repealing the Water Act, 2002. Similarly, in Lao People's Democratic Republic (PDR) the Water and Water Resources Law, 1996 is the primary law concerned with water resources management in Lao PDR and it focuses on the protection of water resources, water resource planning and prevention of water pollution. Similarly, in Vietnam, the Law on Water Resources (LWR) provides the basis for establishing the basic policies, principles and framework for the planning, exploitation, utilization, conservation, protection, regulation and management of all water resources for comprehensive, integrated and sustainable development. It also prescribes the administrative

authority and responsibility to implement this Law, including the cooperation, communication and coordination of the various ministries and agencies of the government, provinces, water users and the public (Turner, Pangare, & Mather, 2009).

Under the Water Act, 2016 the water governance framework can be categorized into resource management, service provision, financing and dispute resolution based on the institutions created. This spectrum caters for the management of the resource, its harvesting and storage, its delivery to the various users both domestic and commercial, the financing of operations of these aspects and the resolutions of dispute that arise anywhere along this spectrum. This is similar to; Cambodia where different government agencies are responsible for the provision, management and regulation of water supply and in Lao PDR where there exists bodies for sector administration, Water Supply Authority's Regulatory Board, financing of sector operations and cost recovery and utility operation (Turner, Pangare, & Mather, 2009).

Further, the Acts assign roles on management of water resources and water services management to separate institutions. This is in line with what Solanes and Jouravev (2006) who state that in order to avoid problems, many jurisdictions assign responsibilities for policy formulation, water allocation, and programme and project evaluation to an agency that does not have responsibilities for the use of the resource.

The public interest theory, while not directly having driven the change from the Water Act, 2002 to the Water Act, 2016, can be seen in terms of the both water acts putting in place measures for efficiency in water service provision by ensuring it establishes relevant institutions and relevant regulatory mechanisms. It also makes use of private water service providers to ensure efficiency in water service provision. The theory states that efficient regulatory institutions are a key element of public interest (Den Hertog, 2010). The public participation envisioned for the Cabinet Secretary, Water Resources Authority and Water Services Regulatory Board can be viewed as a method for ensuring that the public interest is translated into political processes in form of strategy and policy formulation. This negates what Den Hertog (1999) stated in the public interest theory which "fails to predict how the public interest is translated through political institutions into a decision, who will be regulated and who will receive the benefits or

bear the costs, or the form of the regulation". The water Acts state the institutions that will be regulated, and the costs are born by taxpayers and water users.

In both water acts, regulation of the water resource has been assigned to the Water Resources Authority and regulation of water services to the Water Services Regulatory Board. This is in line with the theory which proposes that regulatory responsibility be assigned to the government (Den Hertog, 2010). The Water Act, 2016 states that "Every water resource is vested in and held by the national government in trust for the people of Kenya." This is in line with the public interest theory which is based on the premise that the ideal political community is that in which property is owned in common and serves a common interest as envisioned by Plato (Den Hertog, 2010).

5.1.2 Water Sector Institutions from 2002 to 2017

a. Ministry of Water and Sanitation

Gerlak (2006) and the Organisation for Economic Co-operation and Development (2005) note that it is important to have a leading and coordination body given complexity and the number of stakeholders in the water sector. The Water Act, 2002 and Water Act, 2016 both provided for an overarching body through the Ministry of Water and Sanitation to ensure that water management was or is planned for and coordinated, and services delivered. This is in line with a number of countries that have an overall water governance institution e.g. in Cambodia the establishment of the Ministry of Water Resources and Meteorology which is the lead water sector agency tasked with providing sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a river basin context (Turner, Pangare, & Mather, 2009).

In addition, the CS in his or her capacity is responsible for the development of the water resource management strategy and the water services strategy as opposed to the Water Act, 2002 where the Ministry had the responsibility of the water services strategy with the water resource management strategy left to the Water Resources Management Authority. In the Water Act, 2016 therefore, strategy formulation purely lies with the Ministry. This ensures that the country has a plan for water resources and services that sets direction for all actors and institutions in the development and management of water resources and services. This is crucial in any

governance system to avoid a scenario where the same institution develops a strategy and has to implement it therefore resulting in a conflict of interest or lack of an overall framework.

Aside from the Ministry of Water and Sanitation and institutions created under the Water Act 2002 and Water Act, 2016, a number of other ministries and government agencies play different roles in the water sector. Coordination among these institutions is therefore crucial so as to ensure seamless delivery of service and management of the water resource. These are however not catered for in terms of creating coordinating mechanisms to ensure water as a resource is utilized efficiently. These include the Ministry of Environment and Forestry, Ministry of Health, Ministry of agriculture, Livestock and Fisheries and the Ministry of Energy. This differs from Cambodia which has a Sector Coordinating Committee for the Development of Water Supply and Sanitation that is chaired by the Ministry of Industry, Mines and Energy. The Committee includes eleven other institutions such as Ministry of Rural Development, Ministry of Public Works and Transport, Ministry of Water Resources and Meteorology, Ministry of Health, Ministry of Environment, Council of Ministers, Commune Development Council, Ministry of Economy and Finance, Ministry of Agriculture, Forestry and Fisheries, Phnom Penh Water Supply Authority and the Ministry of Planning (Turner, Pangare, & Mather, 2009).

The Political aspect as envisioned by the WGF (UNDP-SIWI Water Governance Facility , 2016) entails equal right for all water stakeholders to take part in the decision making process. The government's responsibilities include ensuring that long-term water policies and plans are established and interested parties, including water users, environmental and social advocates, and the broader community, have the opportunity for effective engagement in the process (Camkin & Neto, 2016). Both acts emphasized the role of local communities in influencing how water resources are managed and how water services are rendered by emphasizing on inclusivity and public consultations in key decisions affecting local communities and users by requiring the Cabinet Secretary to involve the public. The quality, relevance and effectiveness of government policies depend on ensuring wide participation which is likely to create more confidence in the institutions that deliver policies (Rodgers & Hall, 2003). The setting up of structures like the user associations and action groups further provide the mechanisms necessary for involving them. This ensures that the constitutional requirement of participation is observed as well as caters for the concerns and contributions of the individuals who receive water services. This is

supported by Teodosiu, Barjoveanu, and Vinke-de Kruijf (2013) who state that it is widely supported that the implementation of Integrated Water Resource Management requires a participatory approach meaning that water management authorities should involve relevant stakeholders such as representatives in planning, decision-making and implementation, instead of adopting a top-down approach.

b. Water Resources Management Authority (WARMA) and the Water Resources Authority

Resource management is critical in water governance given its scarcity. The Acts cater for its management in terms of allocation, source protection and conservation, water quality management and pollution control. This is different from Mexico, Chile, Brazil, Spain, Morocco, South Africa, Sri Lanka, China, and India where water policies remained silent on the issue of water pollution, which has now come to the fore as a critical determinant to water quality and the right to access clean water (Saleth & Dinar, 2000). The Water Act, 2016 additionally includes flood mitigation. Flood mitigation is an important aspect of water resource management as it helps to make good use of the water as well as prevent any damages that emanate from flood water. Environmental roles in resource management include water conservation, designating protected areas and ensuring Environmental Impact Assessments are done where necessary.

The Water Act, 2016 further contemplates a level of interdependence between the Basin Committees and the Authority for purposes of management of water resources, including the Authority providing technical support to the Basin Committees. Similarly, in Romania water resources management has been organized at river basin level. There is a central water management authority, the *Romanian Waters* National Administration which is responsible for the management of the quality and the quantity of ground water and surface water and it operates through branches at the river basin level where there are River Basin Committees (Teodosiu, Barjoveanu, & Vinke-de Kruijf, 2013).

The social roles catered for in the Acts include public consultation in the determination of applications for permits, prioritizing water for domestic use and providing human resource capacity for the organization. This is in line with the social aspect of water governance as

envisioned by Camkin and Neto (2016) who state that it incorporate participatory processes and decentralized decision making. Public consultation ensures that all aspects of the resource and concerns of all stakeholders are addressed in the process hence reducing cases of disputes. In Romania, public participation was used in dealing with water challenges like water quality (Teodosiu, Barjoveanu, & Vinke-de Kruijf, 2013).

Prioritization of water for domestic use ensures that the human rights aspect is always addressed, and human survival is given priority over other commercial uses. Regulation is intended to provide a balance between social and commercial goals (Van den Berg & Danilenko, 2017).
Political roles entail the maintenance of a national database and information system and coordination with relevant organizations. In addition, they serve an advisory role to the Cabinet Secretary on the management and use of water resources and matters of formulation of policy on national water resource management, water storage and flood control strategies as opposed to the Water Act, 2002 which assigned the formulation of the strategy to WARMA. This aids in creating different levels for policy formulation and regulation which is crucial in a governance system to ensure that there is no conflict of interest where the strategy is formulated by WRA and they are still tasked with implementing it.

The Authority is tasked with coordinating with other regional, national and international bodies for the better regulation of the management and use of water resources. Water is a resource that cuts across boundaries and territories and its management therefore may fall in different jurisdictions that require collaboration so as to promote its efficient use and avoid conflict. Policies and actions must be coherent (Camkin & Neto, 2016). Coherence in these acts is envisioned by these coordination mechanisms with various bodies that relate to their mandate.
The Authority is required to maintain a national monitoring and information system. This system creates a database of information that can be used for evidence-based decision making for the Authority as well as the Ministry of Water and Sanitation. A regulatory framework should have the regulator as a repository of knowledge and experience on water issues in the country (Mwanza, 2010).

Economic roles include the funding provisions for the authority, charges imposed for water use and ensuring efficient use of water. The Authority is required to give permission through permits

for water use and abstraction. This in in line with Camkin and Neto (2016) who state that the economic aspect should cater for water access entitlements. This ensures that water use is controlled and therefore promotes efficiency in its use. The funds the Authority charges for the permit i.e. water permit fees and water use charges can be retained by the Authority to support its operations and administrative functions. The Water Act, 2016 provides specific scope for permits to include water use, water abstraction and water recharge as opposed to the Water act, 2002 which just covered water use. This ensures that all aspects of the resource management are covered therefore minimizing gaps. "Essentially, there are three major items to be financed. First is water resource management, including water use (both withdrawal and wastewater disposal) through charges or fees, plus forfeiture for non-use of water use rights" (Jacobi, et al., 2014).

The environmental aspect mainly ensures the sustainable use of water. "Sufficient flow of water of appropriate quality is critical to maintaining ecosystem functions and services that build upon them" (UNDP-SIWI Water Governance Facility , 2016). The environmental aspect is catered for in both acts by regulating and controlling the use of water resources, setting quality objectives, setting minimum standards, prevention of pollution and maintenance of standards of public works all of which are assigned to the Water Resources Authority. The Water Act, 2016 further provides that the Authority can institute criminal proceeding to any individual or entity that fails to adhere to required standards or procedures. The "rules of the game" need to be clearly spelled out, as should the consequences for violation of the rules, and have built-in arbitration enforcing mechanisms to ensure that satisfactory solutions can still be reached when seemingly irreconcilable conflicts arise among the stakeholders (Rodgers & Hall, 2003).

c. Water Services Regulatory Board

The Water Act, 2002 and the Water Act, 2016 both provide for a body for water and sewerage services regulation, WASREB. WASREB has social roles which include consumer protection, provision for a complaints' mechanism and capacity provisions. A key role of the Board is consumer protection which it aims to achieve by; setting national standards for provision of services and asset development for WWDAs and WSPs; setting license conditions and issuing licences to WSPs; monitoring the performance of Water Service Providers to ensure they adhere to set standards; facilitating the formation of consumer groups and ensuring that customers have

a complaints mechanism. It also sets tariffs for water and sewerage services which is in line with Mwanza (2010) who stated that a regulatory framework should include approval of tariffs to ensure commercial viability of the service providers.

Water is critical for survival and useful in many other aspects of society, if not properly managed, WSPs in an effort to realize profits may take advantage of users by charging exorbitant fees or delivering low quality. This is in line with what Mwanza (2010) stated that a regulatory framework should include protection of consumers against monopoly practices of service providers. It further supports the argument that African countries with formal regulatory agencies in place provide better customer protection and higher service quality (Van den Berg & Danilenko, 2017). The Water Act, 2016 further creates a system for continuously obtaining views from stakeholders through complaints mechanisms and consumer groups. As an accountability role they are expected to report annually to the public on issues of water supply and sewerage services and the performance of relevant sectors and publishing the reports in the Gazette. Decision makers in government, the private sector and civil society organizations are accountable to the public, as well as to institutional stakeholders. Each institution must explain and take responsibility for what it does. This accountability differs depending on the organization and whether the decision is internal or external to an organization (Rogers & Alan, 2003). Accountability is a key principle of a good regulatory system accountability (David, Groom, Halpern, & O'Connor, 2007, Mwanza, 2010,Banerjee & Morella, 2011). WASREB is also expected to provide upon the payment of a prescribed fee, its annual report and information from its database. While this is a key measure to ensure accountability the payment of a fee may not be possible for every citizen and can be an impediment to the access of information and public participation.

WASREB further has a role with regard to marginalized communities where they are expected to make recommendations on how to provide basic water services to marginalised areas and ensure that the right to water is realized. In order to ensure access to water and adhering to the human right imperative it is crucial to ensure that the entire population in Kenya has access to water services. A regulator should help the poor gain sustained access to water services (Mwanza, 2010).

Political roles cover the maintenance of a database and coordination with other relevant institutions. As an accountability role they are expected to report annually to the public on issues of water supply and sewerage services and the performance of relevant sectors and publishing the reports in the Gazette. The Water Act, 2016 no longer assigns the role of coordination with other relevant institutions to WASREB. This leaves a gap in terms of liaising with other institutions that may be crucial in the delivery of its mandate. However, the Act provides for WASREB to work with the county governments in enforcing certain regulatory requirements including terms of service provision by the WSPs. In this regard, the regulatory board may consult the county government in imposing special regulatory regime on a licensee who contravenes requirements of license.

The Board is further expected to maintain a national database and information system on water services. This database could be crucial in guiding decision making based on evidence and therefore guide policy and strategic changes where necessary. A regulatory framework should have the regulator as a repository of knowledge and experience of water issues in the country (Mwanza, 2010).

Economic roles include promotion of efficiency, performance management, determining charges to be imposed, advising water service providers, determining licensing applications and enforcement of license conditions. These are embedded in various functions, for example, a key shift in the role of the Board is their direct licencing and monitoring of WSPs in the Water Act, 2016 as opposed to licencing by Water Services Boards who then were responsible for WSPs in the Water Act, 2002. WASREB further has a financial role. They charge licence fees and can retain them to fund their operations. This ensures that the Board has funds for operations and funding its activities. This is in addition to funds allocated by the National Government in annual budgets. Camkin and Neto (2016) state that the economic aspect should cater for meeting the cost of a sustainable water future. "Essentially, there are three major items to be financed. …second, is water service provision through public works (infrastructures), via water tariffs" (Jacobi, et al., 2014).

Environmental roles include the promotion of water conservation and demand management. This is achieved through the enforcement of license conditions and ensuring water works meet

the set standards. The Water Act, 2016 further creates some clarity in roles e.g. it prescribes the scope of WASREB's monitoring of compliance with established standards for the design, construction, operation and maintenance of facilities for water services to WWDAs and WSPs as opposed to the Water Act, 2002 which was not specific on the institutions.

d. Water Services Board (WSB) and Water Works Development Agency

In the Water Act, 2002, the responsibility of providing water and sanitation services was vested in the WSBs in a specific geographic area of jurisdiction through the licencing Water Service Providers. The WSPs would pay annual license fees and lease fees for using infrastructure of the WSBs. As opposed to the WSBs, the WWDAs are responsible for development, maintenance and management of national public water works. Water works are critical in delivery of water services since it provides the infrastructure necessary for water and sewerage services. In addition, the WWDAs have the role of capacity building for County Governments and Water Service Providers. This ensures that their capacity to manage the water works is continuously improved. In both Acts, however, the WSB and the WWDA can provide water services in cases where a WSP has not been identified. This provides a mechanism for water provision to continue uninterrupted.

The Water Act, 2016 empowers the Cabinet Secretary to establish one or more "water works development agencies and define geographical area of jurisdiction for each such agency". It is worth noting that although the Cabinet Secretary is required to consult with stakeholders in development of criteria for establishment of the Water Works Development Agencies, it is the prerogative of the Cabinet Secretary.

The Water Act, 2016 fails to provide clarity on how the role of "development, maintenance and management of national public water works" assigned to WWDAs complements the one assigned to the National Water Harvesting and Storage Authority of "Undertaking on behalf of the national government, the development, maintenance and management of national public water works for water resources storage and flood control". This may create an overlap in the execution of their mandates.

The WWDAs further seem to undermine the ability of county governments to establish cross

county waterworks or projects through joint committees or authorities established by the counties. Article 189 (2) of the Constitution empowers counties to establish joint committees or authority to implement projects that are cross county in nature.

The agencies are further allowed to source for funding including loan arrangements, develop projects without the control of the counties and hand over the debt to the county governments for repayment. Where counties are not able to make the required payments, the law empowers the agencies to take over the operation of the water works. This approach assumes county governments lack agency to independently design, borrow and implement water works development.

There are two key implications of WWDAs. First, is that water service provision, a constitutional function of the county governments, can be undertaken by the national government without consent or agreement of the county governments. Second, the agencies can become WSP within the territory of a county without approval or licensing by the county governments.

e. Water Services Trust Fund and Water Sector Trust Fund

This fund caters for underserved or marginalized communities. This is crucial in ensuring that the entire population of Kenya is catered for in terms of accessing water therefore ensuring equity. It recognizes that there are areas where water provision may be commercially non-viable hence unattractive for water service providers. The WSTF can be viewed to some extent as a creation of an additional body outside the constitutional mechanism to finance the counties. This clashes with the provisions of the Constitution which provide that financing of the county governments including for the water sector should happen though the instruments provided in the constitution, which are the annual allocation through regular budgets and through the equalization fund.

f. Water Appeals Board and the Water Tribunal

Dispute resolution has been catered for in both acts by the Water Appeals Board in the Water Act, 2002 and the Water Tribunal in the case of the Water Act, 2016. The roles of the Appeals

Board cut across the political, social, economic and environment roles since it determines matters that cut across these roles.

The dispute resolution mechanism caters for all possible avenues where dispute may arise i.e. disputes "concerning water resources or water services" as well as those that arise from the various institutions i.e. WRA, WASREB and the Cabinet Secretary. The Tribunal also serves under the Judicial Service Commission (JSC) and not under the Ministry of Water and Sanitation like the Water Appeals Board in the Water Act, 2002. This aligns it with the national framework for handling legal disputes.

Dispute resolution is critical in water resource and services management given that it involves multiple sectors and players as noted by the Organisation for Economic Co-operation and Development (2005) and there may be potential for conflict to arise. It also ensures that there is an overall body to mediate over disputes.

g. National Water Harvesting and Storage Authority

The Water Act, 2016 caters for water resource storage and flood control, a role conspicuously missing in the Water Act of 2002, but which was assigned to an institution that was not established by that Act, the National Water Conservation and Pipeline Corporation (NWCPC). NWCPC were tasked with the development of large-scale projects for harnessing water supply such as the construction of dams, flood control and water harvesting. The Authority serves a critical role given that water has to be stored somewhere before it is supplied to the various users.

The NWHSA is tasked with policy formulation, a task ideally meant for the overall body in charge of water, in this case the Ministry of Water and Sanitation. This differs from the case of WRA and WASREB who have an advisory role to the CS to develop the necessary policies and strategies. NWHSA, however, has an advisory role to the CS in the formulation of the national water resources storage and flood control strategies which they enforce.

Another crucial role that NWHSA undertakes and that is important in water management is undertaking water emergency interventions during drought. This means the Water Act, 2016 caters for scenarios of water scarcity and puts in place a specific role for such cases.

Water harvesting and storage, flood control and the provision for emergency interventions during drought are crucial aspects of management of water as they ensure that the resource is appropriately managed and in cases of water scarcity necessary measures are put in place to ensure water access. The provision for an entity specifically to cater for these roles under the Act is therefore a necessary measure to ensure that they are not omitted in the water resource management spectrum. As discussed in section 5.1.1c there is a potential clash in roles between NWHSA and the WWDAs in terms of water works development.

5.1.2 Gaps in Kenya's Water Sector Institutional and Regulatory Framework

The gaps identified included lack of proper regulation of some institutions, overlaps in roles and omission of key provisions for cross sector coordination.

Regulation of all institutions is also required to ensure overall quality of water resource management and service provision. However, as presented in the findings, the Water Act, 2016 has two regulatory institutions for water service provision and water resource management but the Act fails to articulate how they regulate the WWDAs and the NWHSA which are responsible for water works development. An omission in the regulation of any of the institutions therefore poses a challenge to the maintenance of the overall quality of the service.

Overlapping roles between WWDAs and the NWHSA create potential for inefficiencies or poor execution of mandates since a role may be omitted thinking the other institution is taking care of it. While the role of NWHSA is specific to storage and harvesting, the role of WWDA is not specific and that may be taken to mean that WWDA can develop storage and harvesting works as well. This lack in clarity may lead to conflicts. A study conducted in Rwanda identified the lack of clarity of the roles and responsibilities of the various stakeholders as one of the key impediments to the development and management of water resources in a sustainable way (Aboniyo, Umulisa, Bizimana, Pascal, & Mourad, 2017). Perret (2002) also found that the South Africa National Water Act lacked clarity on the implementation of features on certain key issues.

Water governance requires an inclusive and coordinated approach (Camkin & Neto, 2016). However, with the exception of the Water Sector Trust Fund, the Water Act, 2016 fails to envision collaborations or liaising efforts between the institutions within the sector and those outside of it. This may create a scenario where each institution works independently hence impeding efficiency in the use of resources. This is in line with Migai (2007) who states that "the lack of clear provisions of how an institution will collaborate with another to achieve a common objective creates conflict in execution of mandates as stated." It is also consistent with study findings from India that indicated inconsistent and incoherent policies between national and state governments. India has similar sector-specific water departments, with separate ones for drinking water, others for major versus minor irrigation or hydropower, and others for environmental monitoring making the implementation of a holistic policy difficult (Prabhu, 2012). The limited coordination envisioned in the Water Act, 2016 is likely to impede the responsiveness of the water institutions and the sector at large in a timely manner to factors that include extensive collaborations e.g. issues to do with climate related effects like droughts or floods. This can be likened to a situation in Canada and Chile that found that limited institutional coordination and integration, a result of management rigidity, are challenges limiting the responsiveness of water governance in both Canada and Chile, especially at the local level (Hurlbert & Diaz, 2013).

5.1.3 Challenges experienced in implementing the mandates in the regulatory framework

Challenges identified include; funding, regulation challenges whereby County Governments feel that they should regulate certain functions in their areas of jurisdiction hence interfering with regulation of Water Service Providers, and coordination challenges.

Funding shortages can impact on the achievement of an institutional mandate. As a result of the shortage the organization has to prioritize what it can do with what is available and this may mean total omission of some functions or less than optimal quality in delivery. Inadequate funding for water conservation measures leads to the gradual decline in quality and quantity of water from the sources (Ministry of Water and Irrigation, 2011). Similarly, Kithuku (2014) found that the lack of access to finance and the technical and managerial capacity to use finance effectively and the lack of clear guidelines for the provision and regulation of private sector

involvement in the financing and management of water supply and sewerage services influence water sector reforms in Tanathi Water Services Board.

The regulatory challenges can result in conflict between institutions and its actors in the execution of mandates. It should be clearly understood by all the actors that regulation remains the function of the National Government and is being executed through the institutions created in the Water Act, 2016. These governance challenges can also be linked to the enforcement challenges identified whereby the counties interfere with the execution of the national institutions' mandates. This may lead to a scenario where services are impeded due to a clash over who should perform the function. Moraa, Otieno, and Salim (2012) highlight the lack of unified framework for the management of water resources as a challenge faced by the Ministry of Water in achieving envisaged water reform targets.

Coordination is a key aspect of policy implementation. The lack of it affects the execution of mandates and the achievement of objectives. Water cuts across several institutions, sectors and functions. While water management and service delivery is key, the ministries of environment, agriculture, energy and health all have a role to play in its management and use. A good coordination mechanism anchored in the regulatory framework is therefore vital to ensure the resource as well as service delivery is well managed. Poor coordination can result in wastage of water resources, poor quality of delivery and inefficient and ineffective management of water resources and service delivery. Lack of coordination of institutions was identified by De Loë and Patterson (2017) as a key shortcoming in water governance. The lack of coordination has also been linked to the setting of tariffs due to different levies being charges or imposed on WSPs by various institutions making the cost of water service provision higher. The main challenge in Africa does not lie in the water sector directly but instead the weakness of institutions and governance issues that lead to excess costs in the sector (Estache & Kouassi, 2002). This can also point to policy fragmentation where different institutions under different acts all impose levies. This is similar to the United States of America and Australia where challenges from policy fragmentation persist (Waye & Son, 2010).

5.2 Conclusion

In conclusion, the study found that Kenya's water sector institutional and regulatory framework presented in the Water Act, 2016, draws from the Constitution of Kenya, 2010 by catering for; decentralization, water as a human right and vesting water ownership in the state. It caters for water policy formulation, water resource management and water service provision. Its policy formulation rests with the Ministry of Water and Sanitation with the exception of the water harvesting policy which lies with the National Water Harvesting and Storage Authority.

The Act provides institutional mechanisms for water resource management and service provision by creating specific institutions for regulation of water resources, regulation of water service provision, water works development, water harvesting and storage, financing of water services, catering for marginalized communities and dispute resolution. Under these institutions it also puts in place measures for consumer protection, dealing with water scarcity and flood control. The Water Act, 2016 further caters for participation, enforcement mechanisms, accountability and tariff setting which are among the principles of a good governance framework.

Despite all this, the framework; has regulatory gaps, fails to envision critical collaborative mechanisms both within the sector and outside of it and has overlapping roles. It is further faced with implementation challenges that include funding shortages, regulatory enforcement challenges and challenges emanating from less than optimal coordination. The existence of gaps and challenges create opportunities for inefficiencies, impeded execution of mandates and duplication of roles which affect the general access of water by the Kenyan population.

5.3 Recommendations

Drawing from the findings and conclusions of the study, the following recommendations are made regarding the areas of review for the water institutional and regulatory framework:

1. **Coordination mechanisms**

There is need to clearly detail envisioned coordination mechanisms in the Water Act, 2016. This should include coordination or collaborations among the water institutions and specifically those established by the Act and institutions outside of the water sector but that play a crucial role in

the use of water resources. As part of the functions of each water institution, the Water Act should assign a role requiring them to collaborate and coordinate amongst themselves and with other relevant institutions in order to achieve their mandate.

In addition the Water Resources Authority (WRA) should collaborate with the National Environmental Management Authority (NEMA), the Water Services Regulatory Board should collaborate with County Governments, the Water Works Development Agencies should collaborate with County governments and the National Water Harvesting and Storage Authority (NWHSA) should collaborate with NEMA.

2. **Clarity of roles**

The Water Act should clearly state the role of the Water Works Development Agencies with regard to the scope of national water works development as it has done for National Water Harvesting and Storage Authority to avoid potential clashes in the execution of mandates. In line with this the Act should further assign all policy formulation roles to the Ministry of Water and Sanitation and specifically in the case of the National Water Harvesting and Storage Authority which is assigned this role of developing a water harvesting policy.

3. **County Government Involvement**

The Act should establish a mechanism for County governments to participate in certain aspects of the work of the Water Works Development Agencies specifically in the role that involves obtaining of loans for water works development which counties are expected to pay after projects are handed over. This can be realized by having a member of the respective County Government being a member of the Board of the Water Works Development Agency.

4. **Regulation of water works**

The Water Works Development Agencies and the National Water Harvesting and Storage Authority should be regulated under the Water Services Regulatory Board hence creating a mechanism for oversight of the work they do.

5.4 Limitations of the Study

Limitations were encountered during the data collection phase. Accessing key informants was challenging given their field-based activities across the country and in the process the Coronavirus pandemic set in making various institutions close down non-essential services until such a time when it would be under control. However, through phone interviews and secondary data, sufficient data was gathered and analyzed to respond to the research questions.

5.5 Areas for further research

This study examined the water regulatory and institutional framework for the water sector from 2002 to 2017, identified gaps in the regulatory framework, and the resulting challenges in execution of mandates. This study focused on national level institutions Future studies could focus on examining the institutional framework at the County level including County Governments, their departments in charge of water and Water Service Providers.

REFERENCES

Aboniyo, J., Umulisa, D., Bizimana, A., Pascal, J., & Mourad, K. (2017). National Water Resources Management Authority for a Sustainable Water Use in Rwanda. *Sustainable Resources Management Journal, 2*(3), 1-15.

Akhtar, S., Shah, S., Rafiq, M., & Khan, A. (2016). Research design and statistical methods in Pakistan Journal of Medical Sciences (PJMS). *Pakistan journal of medical sciences, 32*(1), 151-154.

Armstrong, M., & Sappington, D. (2007). Recent developments in the theory of regulation. In M. Armstrong, & R. Porter, *Handbook of industrial organization III* (pp. 1557-1700). Amsterdam, North-Holland.: Elsevier.

Banerjee, S. G., & Morella, E. (2011). *Africa's water and sanitation infrastructure: access, affordability, and alternatives.* . Washington, D.C: World Bank Publications.

Bryman, A. (2012). *Social Research Methods.* New York: Oxford University Press.

Burek, P., Satoh, Y., Fischer, G., Kahil, M., Scherzer, A., Tramberend, S., Nava, L.F., Wada, Y., Eisner, S., Florke, M., Hanasaki, N., Magnuszewski, P. & Wiberg, D. (2016). *Water Futures and Solution: Fast Track Initiative.* Laxenburg: Internationnal Institute for Applied Systems Analysis.

Camkin, J., & Neto, S. (2016). Roles, Rights and Responsibilities In Water Governance: Reframing the Water Governance Debate. *Sage Publications*, *179*(3), 82-112.

Chepyegon, C., & Kamiya, D. (2018). Challenges Faced by the Kenya Water Sector Management in Improving Water Supply Coverage. *Journal of Water Resource and Protection, 10*(1), 85-105.

De Loë, R. C., & Patterson, J. (2017). Rethinking water governance: moving beyond water-centric perspectives in a connected and changing world. *Natural Resources Journal, 57*(1), 75-100.

Den Hertog, J. A. (2010). Review of economic theories of regulation. Discussion Paper Series/Tjalling C. Koopmans Research Institute, 10(18).

Den Hertog, J. A. (1999). General theories of regulation. In B. Bouckaert, & D. G. Gerrit, *Encyclopedia of Law and Economics* (pp. 223-270). Vancouver: Edward Elgar Publishing.

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). (2008). *Water Supply and Sanitation Sector Reforms in Kenya Tanzania, Uganda and Zambia: Challenges and*

Lessons. Dar es Salaam: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

Development Initiatives. (2018). *Enhancing access to safe water and improved sanitation services in Kenya: Are we on track?* . Nairobi: Development Initiatives .

Ehrhardt, D., Groom, E., Halpern, J., & O'Connor, S. (2007, April). , *Economic Regulation of Urban Water and Sanitation Services: Some Practical Lessons.* The World Bank. Washington DC: The World Bank.

Eller, W., Gerber, B., & Robinson, S. (2018). *Public administration research methods: Tools for evaluation and evidence-based practice.* New York: Routledge.

Estache, A., & Kouassi, E. (2002). *Sector Organization, Governance, andthe Inefficiency of African Water Utilities.* Washington, D. C: World Bank.

Food and Agriculture Organization. (2007). *Coping with Water Scarcity: Challenge of the Twenty First Century.* Geneva: Food and Agriculture Organization.

Food and Agriculture Organization of the United Nations. (2015). *AQUASTAT Country Information on Water Resources.* http://www.fao.org/nr/water/aquastat/ countries_regions/KEN/:AQUASAT. Retrieved April 24, 2019

Gerlak, A. (2006). Federalism and U.S. Water Policy: Lessons for the Twenty-First Century. *Publius: The Journal of Federalism*, 231-257.

Glaeser, E., & Shleifer, A. (2003). The rise of the regulatory state. *Journal of Economic Literature*, 401-425.

Goldin, J. A. (2010). Water Policy in South Africa: Trust and Knowledge as Obstacles to Reform. *Review of Radical Political Economics, 42*(2), 195-212.

Government of Kenya. (1999). *The National Policy on Water Resources Management and Development.* Nairobi: Government of Kenya - Ministry of Water Resources.

Government of Kenya. (2002). *The Water Act, Chapter 372, Laws of Kenya.* Nairobi: Government of Kenya. .

Government of Kenya. (2007). *Kenya Vision 2030: the popular version.* Nairobi: Government of Kenya.

Government of Kenya. (2010). *Constitution of Kenya.* Nairobi: National Council for Law Reporting.

Government of Kenya. (2016). *The Water Act.* Nairobi: Government of Kenya.

Government of Kenya Ministry of Water and Irrigation. (2005). *Kenya National Water Development Report: A Case Study.* Nairobi: Government of Kenya.

Guerin, K. (2003). Encouraging quality regulation: Theories and tools. *Treasury Working Paper Series 03/24*.

Hurlbert, M., & Diaz, H. (2013). Water Governance in Chile and Canada a Comparison of Adaptive Characteristics. *Ecology and Society, 18*(4), 61-76.

Institute of Economic Affairs (IEA). (2007). *A Rapid Assessment of Kenya's Water, Sanitation and Sewerage Framework.* Nairobi: Institute of Economic Affairs.

Jacobi, P., De Stefano, L., López-Gunn, E., Solanes, M., Delacámara, G., Marín, G., & Embid, A. V. (2014). Reforming water. In B. Willaarts, A. Garrido, & M. Llamas, *Water for Food and Wellbeing in Latin America and the Caribbean* (pp. 286-315). New York: Routledge.

Jaglin, S. (2002). The Right to Water versus Cost Recovery: Participation, Urban Water Supply and the Poor in Sub-Saharan Africa. *Environment & Urbanization*, 238-239.

Kaijser, A. (2003). Redirecting infrasystems towards sustainability. In B. Hansson, *Individual and Structural Determinants of Environmental Practice* (pp. 152-179). London: Routledge.

Kaika, M. (2003). The Water Framework Directive: A New Directive for a Changing Social, Political and Economic European Framework. *European Planning Studies, 11*(3), 299-316.

Kenya National Bureau of Statistics (KNBS). (2015). *Kenya Demographic and Health Survey 2014.* Nairobi: Kenya National Bureau of Statistics (KNBS).

Kenya National Bureau of Statistics (KNBS) and Society for International Development (SID). (2013). *Exploring Kenya's Inequality: Pulling apart or pooling together?* . Nairobi: Kenya National Bureau of Statistics (KNBS) and Society for International Development (SID).

Kithuku, S. M. (2014). *Factors influencing the implementation of water sector reforms in Kenya: A case of Tanathi Water Services Board in Kitui.* Nairobi: (Unpublished Masters Thesis). University of Nairobi.

Lemoine, N., & Patrick, R. J. (2014). Water Governance in Northern Saskatchewan: Opportunities and Challenges. *Canadian Journal of Urban Research, 23*(1), 46-60.

McGarry, M., Mugisha, S., Hoang-Gia, L., Unheim, P., & Myles, M. (2010). *Water Sector Governance in Africa.* Tunisia: African Development Bank.

Migai, A. (2007). *Governing Water and Sanitation in Kenya: Public Law, Private Sector Participation and the Elusive Quest for a Suitable Institutional Framework.* . International Environmental Law Research Centre (IELRC).

Ministry of Water and Irrigation (MWI). (2005). *Strategic Plan of the Ministry (2005-2009).* Nairobi: Ministry of Water and Irrigation.

Ministry of Water and Irrigation. (2011). *2010 Annual Water Sector Review Report.* Nairobi: Ministry of Water and Irrigation.

Moraa, H., Otieno, A., & Salim, A. (2012). *Water governance in Kenya: Ensuring Accessibility, Service delivery and Citizen Participation.* Nairobi: iHub Research.

Mumma, A. (2007). Kenya's New Water Law: An Analysis of the Implications of Kenya's Water Act, 2002, for the Rural Poor' . In B. Van Koppen, & M. &. Giordano, *Community-Based Water Law and Water Resource Management Reform in Developing Countries* (pp. 158-172). Wallingford: CAB International.

Mwanza, D. D. (2010). *Roles and institutional arrangements for economic regulation of urban water services in sub-Saharan Africa* . Loughborough: Doctoral dissertation, Loughborough University.

Naiga, R., Penker, M., & Hogl, K. (2015). Challenging pathways to safe water access in rural Uganda: From supply to demand-driven water governance. *International Journal of the Commons, 9*(1), 237-260.

Nilsson, D. (2006). A heritage of unsustainability? Reviewing the origin of the large-scale water and sanitation system in Kampala, Uganda. *Environment & Urbanization., 18*(2), 369–385.

Nilsson, D., & Nyanchanga, N. (2008). Pipes and politics: a century of change and continuity in Kenyan urban water supply. *Journal of Modern African Studies, 46*(1), 133–158.

Ogendi, G., & Ong'oa, I. (2009). Water Policy, Accessibility and water Ethics in Kenya. *Santa Clara Journal of international law, 7*(1), 177-196.

Organisation for Economic Co-operation and Development [OECD]. (2015). *OECD Principles on Water Governance.* Paris: Organisation for Economic Co-operation and Development [OECD].

Organisation for Economic Co-operation and Development. (2005). *Guiding Principles for Regulatory Quality and Performance.* Paris: Organisation for Economic Co-operation and Development [OECD].

Pathak, V., Jena, B., & Kalra, S. (2013). Qualitative research. Perspectives in clinical research. *Perspectives in Clinical Research, 4*(3), 2229-3485.

Perret, S. (2002). Water policies and smallholding irrigation schemes in South Africa: a history and new institutional challenges. *Water Policy, 4*(3), 283-300.

Population Action International. (2011). *Why Population Matters to Water Resources.* Washington, DC: Population Action International .

Prabhu, S. P. (2012). *India's Water Challenges.* Washington, D.C: The Atlantic Council of the United States.

Rampa, F. (2011). *Analysing governance in the water sector in Kenya.* Netherlands: European Centre for Development Policy Management.

Regoniel, P. (2015, January 5). Conceptual Framework: A Step by Step Guide on How to Make One. [Blog Post]. In SimplyEducate.Me. Retrieved from https://simplyeducate.me/2015/01/05/conceptual-framework-guide/

Republic of Kenya. (2007). *The National Water Services Strategy (2007^2015).* Nairobi: Ministry of Water and Irrigation.

Rodgers, P., & Hall, A. (2003). *Effective Water Governance.* Sweden: Global Water Partnership.

Rogers, P., & Alan, H. (2003). *Effective Water Governance. Background Paper No. 7. Stockholm: Global Water Partnership Technical Committee.* Stockholm: Global Water Partnerships.

Saleth, R. M., & Dinar, A. (2000). Institutional changes in global water sector: trends, patterns, and implications. *Water Policy*, 175-199.

Teodosiu, C., Barjoveanu, G., & Vinke-de Kruijf, J. (2013). Public Participation in Water Resources Management in Romania: Issues,. *Environmental engineering and management journal*, 1051-1063.

Trémolet, S., & Hunt, C. (2006, August). Taking account of the poor in water sector regulation. *Water Supply & Sanitation Working Notes*. The World Bank Group. Retrieved from http://regulationbodyofknowledge.org/wp-content/uploads/2013/03/Tremolet_Taking_into_Account.pdf

Turner, S., Pangare, G., & Mather, R. (2009). *Water Governance: A situational analysis of Cambodia, Lao PDR and Viet Nam. Mekong Region Water Dialogue.* Gland, Switzerland: International Union for Conservation of Nature and Natural Resources .

UNDP-SIWI Water Governance Facility . (2016, August). Water Governance Facility (WGF). Stockholm, Sweden: Stockholm International Water Institute (SIWI) . Retrieved from https://www.watergovernance.org/resources/water-governance/

United Nations. (2018). *Sustainable Development Goal 6 Synthesis Report on Water and Sanitation.* New York: United Nations.

United Nations General Assembly . (2010). *A/RES/64/292: Resolution adopted by the General Assembly on 28 July 2010* . New York: United Nations General Assembly .

United Nations General Assembly. (2010). *The Human Right to Water and Sanitation.* New York: United Nations General Assembly.

United Nations-Water . (2018). *The Sustainable Development Goal 6 Synthesis Report 2018 on Water and Sanitation.* Geneva: United Nations Water.

Van den Berg, C., & Alexander, D. (2017). *Performance of Water Utilities in Africa.* Washington: World Bank Group.

Van den Berg, C., & Danilenko, A. (2017). *Performance of Water Utilities in Africa.* Washington, D.C: International Bank for Reconstruction and Development / The World Bank.

Wambua, S. (2004). *Water Privatization in Kenya.* . Berlin: Heinrich Boll Stiftung.

Warren, E., Gerber, B., & Scott, R. (2018). *Public Administration Research Methods.* New York: Routledge.

Waye, V., & Son, C. (2010). Regulating the Australian Water Market. *Journal of Environmental Law, 22*(3), 431-459.

World Bank. (2015). *Water Services Devolution in Kenya: Briefing Note to Support Effective and Sustainable Devolution of Water and Sanitation Services in Kenya.* . Washington, D.C.: World Bank Group.

World Health Organization . (2019). *Policy Coherence as a driver of health equity.* Copenhagen: WHO Regional Office for Europe.

Yıldız, D. (2017, February). The Importance of Water in Development. Ankara, Turkey: Hydropolitics Academy Association. Retrieved from https://www.researchgate.net/publication/321292650_The_Importance_of_Water_in_Development_1

APPENDICES

Appendix I: Ethical Clearance Letter

Strathmore UNIVERSITY

16th December 2019

Ms Korir, Belinda
belinda.korir@strathmore.edu

Dear Ms Belinda,

RE: An Analysis of the Evolution of Kenya's Water Sector Regulation from 2002 to 2017

This is to inform you that SU-IERC has reviewed and **approved** your above research proposal. Your application approval number is **SU-IERC0583/19** .The approval period is **16th December, 2019 to 15th December, 2020.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-IERC.
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-IERC within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-IERC within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to SU-IERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely,

for: Prof Florence Oloo
Secretary; SU-IERC

STRATHMORE UNIVERSITY INSTITUTIONAL ETHICS REVIEW COMMITTEE (SU-IERC)
18 DEC 2019
TEL: +254 (0)703 034 000
P. O. Box 59857 - 00200
NAIROBI - KENYA

Cc: Prof Fred Were
Chairperson;SU-IERC

Appendix II: NACOSTI Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **968416**

Date of Issue: **24/January/2020**

RESEARCH LICENSE

This is to Certify that Miss.. Belinda Korir of Strathmore University, has been licensed to conduct research in Nairobi on the topic: An analysis of Kenya's water sector institutional and regulatory framework from 2002-2017 for the period ending : 24/January/2021.

License No: **NACOSTI/P/20/3619**

968416

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

Appendix III: Letter of introduction

Cle Senegale Rd, Madaraka Estate,
P.O Box 59857 00200, Nairobi, Kenya.
Cell: +254 703 414/6/7, Twitter: @SBSKenya
Email: info@sbs.ac.ke or visit www.sbs.strathmore.edu

Strathmore UNIVERSITY
BUSINESS SCHOOL

Wednesday, 06 November 2019

RE: FACILITATION OF RESEARCH – BELINDA KORIR

This is to introduce Belinda Korir who is a Master of Public Policy Management student at Strathmore University Business School, admission number MPPM 101077/17. As part of our MPPM Program, Belinda is expected to do applied research and undertake a project. This is in partial fulfilment of the requirements of the MPPM course. To this effect, she would like to request for appropriate data from your organization.

Belinda is undertaking a research paper on **"An Analysis of the Evolution of Kenya's Water Sector Regulation from 2002-2017."** The information obtained from your organization shall be treated confidentially and shall be used for academic purposes only.

Our MPPM seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and of practical value to your organization.

We appreciate your support and shall be willing to provide any further information if required.

Yours sincerely,

Caroline Tiara.
Manager – Masters' Programs
MBA, MPPM, MCOM

Appendix IV: Informed Consent Form

PARTICIPANT INFORMATION AND CONSENT FORM

An Analysis of the Evolution of Kenya's Water Sector Regulation from 2002 to 2017

SECTION 1: INFORMATION SHEET

Investigator: Belinda Korir

Institutional affiliation: Strathmore University Business School (SUBS)

SECTION 2: INFORMATION SHEET–THE STUDY

2.1: Why is this study being carried out?

The study is being carried out to analyse the policy and legislative changes that have taken place in the water sector from 2002 to 2017 in order to identify the evolution of the roles and responsibilities, challenges and gaps in the current legal and institutional framework and propose areas for review. This sequential analysis is expected to highlight gaps in legislation and overlaps in management between various institutions as well as between the National and County governments. It further aims to inform the areas of improvement in policy and regulatory frameworks for effective management of the country's water resources.

2.2: Do I have to take part?

No. The decision to take part in the study is entirely optional and the decision rests only with you. If you decide to take part, you will be asked to participate in an interview session aimed at obtaining information on water legislation in Kenya. If you wish to stop participating in the study after you begin, you can stop at any time by informing the interviewer.

2.3: Who is eligible to take part in this study?

The study will involve individuals in Water institutions who are or have been involved in the drafting and/or implementation of the selected documents for analysis and, therefore, have the ability to provide relevant information, ideas, and insights on the subject under investigation.

2.4: Who is not eligible to take part in this study?

Individuals who are not involved in the drafting and/or implementation of the selected documents for analysis.

2.5: What will taking part in this study involve for me?

You will be approached and requested to take part in the study. If you are satisfied that you fully understand the study and its goals, you will be asked to sign the informed consent form (this form) and then taken through an interview session which will take a period of approximately one hour.

2.6: Are there any risks or dangers in taking part in this study?

There are no risks in taking part in this study. All the information you provide will be treated as confidential and will not be used in any way without your express permission.

2.7: Are there any benefits of taking part in this study?

The information will complement the current discourse on water reform and inform the areas of improvement in policy and regulatory frameworks for effective management of the country's water resources.

2.8: What will happen to me if I refuse to take part in this study?

Participation in this study is entirely voluntary. In the event that you agree to take part in the study but later change your mind, you are free to withdraw at any time.

2.9: Who will have access to my information during this research?

All research interview records will be stored in securely locked cabinets and all your information will be kept confidential.

2.10: Who can I contact in case I have further questions?

You can contact me, Belinda Korir at the Strathmore Business School, or by e-mail belinda.korir@strathmore.edu or by phone +254706423216. You can also contact my supervisor, Prof. Ruth Kiraka, at the Strathmore Business School, Nairobi, or by e-mail at rkiraka@strathmore.edu or by phone +254 703 034220.

If you want to ask someone independent anything about this research please contact:

The Secretary–Strathmore University Institutional Ethics Review Board, P. O. BOX 59857, 00200, Nairobi, email ethicsreview@strathmore.edu Tel number: +254 703 034 375

I, _____, have had the study explained to me. I have understood all that I have read and have had explained to me and had my questions answered satisfactorily. I understand that I can change my mind at any stage.

Please tick the boxes that apply to you;

Participation in the research study

☐ I AGREE to take part in this research

☐ I DO NOT AGREE to take part in this research

Participant's Signature:

_____

Date: _____/_____/_____

DD / MM / YEAR

I, _____ (Name of person taking consent) certify that I have followed the SOP for this study and have explained the study information to the study participant named above, and that s/he has understood the nature and the purpose of the study and consents to the participation in the study. S/he has been given opportunity to ask questions which have been answered satisfactorily.

Investigator's Signature:

_____

Date:

_____/_____/_____

DD / MM / YEAR

Investigator's Name:

_____

(Please print name)

Time: _____ /_____

HR / MN

Appendix V: Key Informant Interview Guide

AN ANALYSIS OF KENYA'S WATER SECTOR INSTITUTIONAL AND REGULATORY FRAMEWORK FROM 2002-2017

INTERVIEW CODE: DATE:

Name of Institution:

Designation of the respondent:

1. What led to the review or change of the *Water Act, 2002?*
2. How have the roles of your institution evolved between 2002 and 2017? How?
3. What gaps do you think exist in the *Water Act, 2002 or the Water Act 2016* as pertains to the regulation of the water sector?
4. In your opinion are the roles assigned in the Acts clear? Elaborate.
5. What other statutory institutions does your institution collaborate with to deliver on your mandate? Briefly give the nature of the collaboration for each?
6. Are there any gaps in terms of roles assigned to water institutions? Is there any role that has not been assigned to any of the institutions?
7. In your opinion, do overlaps exist in the roles assigned to the various institutions?
8. In your view, what has been the institutional impact of the changes?
9. What challenges have you experienced in the implementation of the *Water Act, 2002 and the Water Act 2016*?

Appendix VI: Document Review Guide

DOCUMENT REVIEW TEMPLATE						
INSTITUTIONAL FRAMEWORK						
WATER ACT, 2002	Institutions established	Roles assigned	Collaborations prescribed by Water act, 2002		Overlaps noted between the institutional roles	Gaps identified) in institutions, their roles and principles embodied in the Act
	1. 2. 3.					
WATER ACT, 2016	Institutions established	Roles assigned	Collaborations prescribed by Water act, 2016	Roles previously assigned in Water act, 2002 (If institution still exists)	Overlaps noted between the institutional roles	Gaps identified in institutions, their roles and principles embodied in the Act
	1. 2. 3.					