

**AN ANALYSIS OF WATER RESOURCE INSTITUTIONS AND THEIR  
EFFECIENCY IN WATER POLLUTION PREVENTION. THE CASE OF NAIROBI  
RIVER.**

**Submitted in partial fulfilment of the requirements of the Bachelor of Laws Degree,  
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## **DEDICATION**


To God Almighty for His grace, to my family for their support, sacrifice and prayers and to my friends for their encouragement and relentless support.

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I am grateful for my supervisor Mr Desmond Tutu for his guidance, insight and mentorship, and Dr Elizabeth Gachenga for her guidance and support during the preparation of my proposal.

## DECLARATION

I declare that this dissertation is my original work and has not been submitted for the award of a degree or any other award in any other university.


Signature: 

Date: 10<sup>th</sup> March 2017

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This Dissertation has been done under the supervision and approval of my supervisor, Desmond Tutu.

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Date: 10/03/2017

## **ABSTRACT**

The starting point of this research the extent of water pollution problem in Nairobi River. Poor water governance has been found to be among the major contributors of water pollution and this paper explores the institutions governing water resources (an element of water governance) with the aim of the adequacy of the current institutional frameworks in controlling water pollution.

## **LIST OF ABBREVIATIONS**

COP	Conference of Paris
EIA	Environmental Impact Assessment
ELC	Environment and Land Court
EMCA	Environmental Management and Coordination Act
INDC	Intended Nationally Determined Contribution
MWI	Ministry of Water and Irrigation
NEMA	National Environmental Management Authority
NRBP	Nairobi River Basin Rehabilitation Project
UN	United Nations
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention for Climate Change
UN WWAP	United Nations World Water Assessment Programme
WASREB	Water Service Regulatory Board
WRMA	Water Resource Management Authority
WRA	Water Resource Authority
NWA	New Water Act

## DEFINITION OF TERMS

**Water governance** refers to the range of political, social, economic, and administrative systems that are in place to develop and manage water resources and delivery of water services at different levels of society.

**Water resources** will be defined as any lake, pond, swamp, marsh, stream, watercourse, estuary, aquifer, artesian basin or other body of flowing or standing water, whether above or below the ground, and includes trans-boundary water resources within the territorial jurisdiction of Kenya.

**Pollution in relation to a water resource** will have the meaning of any direct or indirect alteration of the physical, thermal, chemical or biological properties of the water resource so as to make it, less fit for any beneficial purpose for which it is or reasonably be expected to be used or harmful or potentially harmful to: the welfare, health or safety of human beings; any aquatic or non-aquatic life or property; or the environment.

## CHAPTER 1: INTRODUCTION

### 1.1. Background

Water resource is at the heart of social well-being and economic development and remains the most important component in any ecosystem.<sup>1</sup> Water resources are however facing major deterioration due to water pollution. Worldwide, the average water pollution is approximately 2 tonnes of sewage, agricultural and industrial wastes daily, equivalent to the mass of 6.8 billion people and covering an area of about 1,500 km<sup>3</sup> ( six times more than the area covering rivers in the entire World) according to the United Nations Water World Assessment Programme (UN WWAP).<sup>2</sup>

In Kenya, water pollution became a major concern in the late 1940's with the growth of coffee industry which prompted questions on water disposal and treatment from wet coffee processing.<sup>3</sup> Minimal attempts were then made by the government to control pollution by enacting the Water Act in 1952. The Act created the Water Resource Authority<sup>4</sup>, Water Apportionment Board<sup>5</sup> and Local Water Authorities<sup>6</sup> who applied the Water Undertaker Rules and Pollution (water general) Rules in water pollution control.<sup>7</sup> The regime was however not effective as the minister was given excessive power in the control of water resources and the institutions faced numerous challenges including; corruption, poor governance, inadequate resources and poor legislation.<sup>8</sup> On Kenya gaining independence, urbanisation, industrialisation and population increase subsequently led to the increase water pollution. In a report done in 2004, the UN WWAP found that Kenya faced major water pollution problems with the main pollutants being organic residues.<sup>9</sup>

Nairobi River basin (comprised of Nairobi, Ngong and Mathare River) is among Kenya's most polluted water resources.<sup>10</sup> In a report by the UN WWAP, Nairobi River was

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<sup>1</sup> The United Nations World Water Development Report March 2003.

<sup>2</sup> The United Nations World Water Development Report March 2003.

<sup>3</sup> UN WWAP, Kenya National Water Development Report; Prepared for 2<sup>nd</sup> UN World Water Development Report: 'Water, a shared responsibility' 2006, 209.

<sup>4</sup> Sec 19, *Water Act* (Cap 372) (Repealed).

<sup>5</sup> Sec 25, *Water Act* (repealed).

<sup>6</sup> Sec 27, *Water Act* (repealed).

<sup>7</sup> Nyanchaga E N, 'Water Governance Sector; Comparing development in Kenya, Nepal, South Africa and Finland; Historical timeline in water governance in Kenya' *Juvenes Print Oy* (2007), 25.

<sup>8</sup> Migai A, '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*, 2007, 16.

<sup>9</sup> UN WWAP, Kenya National Water Development Report; Prepared for 2<sup>nd</sup> UN World Water Development Report: 'Water, a shared responsibility' 11.

<sup>10</sup> Tibaijuki A, 'Kenya Screen: Nairobi and its Environment' (2007), 146.

found to be prone to water pollution caused by increased organic loads, partially treated effluent discharges, poor garbage and solid waste disposal.<sup>11</sup> This condition has occasioned spread of water-borne diseases, loss of livelihoods, loss of biodiversity, reduced availability and reduced potential of the rivers becoming source of safe potable water, and the insidious effects of toxic substances and heavy metal poisoning.<sup>12</sup> It further contributed to water scarcity as it limits the available water for use and increases cost of treatment.<sup>13</sup>

Currently the main institutions with the mandate to deal with water pollution prevention include; the Ministry of Water and Irrigation, NEMA and WRA. The Ministry of Water and Irrigation, established in 2003, is the oldest institutions in water resource management. The minister was solely in charge of water resources with the function to control, conserve and investigate water resource.<sup>14</sup> The Ministry is currently charged with policy making function and receives funds that are used in specific water resource projects.<sup>15</sup>

NEMA established in 1999 under the Environmental Coordination and Management Act<sup>16</sup> also plays a role in water pollution prevention. NEMA coordinates all environmental management activities undertaken by lead agencies.<sup>17</sup> In its mandate to establish guidelines and rules for prevention of environmental degradation,<sup>18</sup> NEMA established Water Quality Regulation which requires a license issued by NEMA in order to discharge industrial waste and effluent from treated sewage in water basins.<sup>19</sup>

WRA is the lead agency created to regulate water resources management under the new Water Act of 2016.<sup>20</sup> WRA will take over WRMA which had the following functions under the old water Act; regulating and protecting water resources from adverse effects,<sup>21</sup> issues

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<sup>11</sup> UN WWAP, Kenya National Water Development Report; Prepared for 2nd UN World Water Development Report: 'Water, a shared responsibility' 160.

<sup>12</sup> Ministry of Environment & Mineral Resources, Office of the Minister, NRBP.  
<http://www.basel.int/Portals/4/Basel%20Convention/docs/convention/XX%20Anniversary/Press%20kit/Kenya%20Project%20leaflet.pdf> on 22<sup>nd</sup> March 2016

<sup>13</sup> UN WWAP, Kenya National Water Development Report; Prepared for 2nd UN World Water Development Report: 'Water, a shared responsibility' 68.

<sup>14</sup> Sec 4, *Water Act*.

<sup>15</sup> Centre on Housing Rights and Evictions (COHRE), Right to Water Programme, Summary Description of Water Sector Institutions in Nairobi, Kenya and their Roles, 8.

<sup>16</sup> Centre on Housing Rights and Evictions (COHRE), Right to Water Programme, Summary Description of Water Sector Institutions in Nairobi, Kenya and their Roles, 5.

<sup>17</sup> Sec 9(2) (a), *Environmental Coordination and Management (amendment) Act* (Act no 5 of 2015).

<sup>18</sup> Sec 9(2) (m), *Environmental Coordination and Management (amendment) Act*.

<sup>19</sup> Sec 16, the Environmental Management and Co-Ordination (Water Quality) Regulations, Legal Notice 120, 2006.

<sup>20</sup> Sec 11, *Water Act*.

<sup>21</sup> Sec 8(1) (c), *Water Act* (2002).

permits for activities specified in the act, which include the releasing of pollutants into the river,<sup>22</sup> and verifies any permits in accordance with Water Resource Management Rules.<sup>23</sup> The newly established WRA has slightly wider mandate involving the following functions; formulation and enforcement of standards, procedures and regulations for the management and use of water resources and flood mitigation; regulation of the management and use of water resources; enforce Regulations made under this Act; receive water permit applications for water abstraction, water use and recharge and determine, issue, vary water permits; and enforce the conditions of those permits; collect water permit fees and water use charges; provide information and advice to the Cabinet Secretary for formulation of policy on national water resource management; coordination with other regional, national and international bodies.<sup>24</sup> Although the Water Act introduces a number of changes (discussed in sec 2.4 and 3), most of the functional and structural aspects of the Act remain the same.

The efficiency of water resource management in preventing water pollution requires a system that promotes the proper interactions of the institutions discussed. An example of institutional deficiency that is drawn from the above discussions on institutional functions is an overlap in the function of allowing discharges into the river where **NEMA is mandated to issue** licenses for any discharge of industrial waste and effluent from treated sewage in water basins while the WRA issues permits for activities specified in the act, which include the releasing of pollutants into the river. Both of these functions involve a relative balance of functions.

The research therefore aims analyse all the new institutions mandated to deal with prevention of water pollution and the extent to which the institutional structures are either suitable in dealing with pollution prevention for Nairobi River or not.

## 1.2. Statement of the problem

Drawing from the above discussion it is clear that the current institutional framework (under the 2016 Water Act) for water pollution is almost similar to the former regime, created by the Water Act of 2002, which failed in the enforcement of pollution prevention laws given the prevalence and persistence of water pollution in Nairobi River during its era.

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<sup>22</sup> Sec 25(c), *Water Act* (2002).

<sup>23</sup> Sec 17, *Water Resource Management Rules*, 2007.

<sup>24</sup> Sec 12, *Water Act*.

This paper suggests that the current institutional framework is not adequate in conserving Nairobi River, specifically the pollution prevention mandate.

### **1.3. Statement of objectives**

The **primary objective** of the research is to explore the current institutional mechanisms and their efficiency in controlling water pollution in Nairobi River. The research aims to eventually approve or disapprove the hypothesis that the pollution problem in Nairobi River is largely caused by the institutional failures. It will further realise the following objectives:

1. Analyse the nature of, mandate of, and interrelation between current institutional mechanisms governing Nairobi River.
2. Discuss the challenges faced by the current institutions in regulating water pollution in Nairobi River
3. Provide an ideal for water resource management institutions based on other jurisdictions.

### **1.4. Hypothesis**

This research will test whether there is a link between the prevalence of water pollution in Nairobi River and the mechanisms applied by, and structure of institutions created to deal with pollution prevention and control.

### **1.5. Research questions**

The objectives of the research will be explored in the form of the following questions:

1. What is the nature of, mandate of, and interrelation between the current institutional mechanisms governing Nairobi River?
2. What are the challenges facing the current institutional mechanisms in regulating water pollution?
3. What is the institutional ideal for Nairobi River based on principles of good governance in the Kenyan Constitution, other jurisdictions and international best practices?

### **1.6. Justification of the study**

The study will contribute towards the solving water pollution in Nairobi River which will significantly improve; health standards for the population living along Nairobi River,

increase availability of water for use, contribute towards Nairobi River Basin Rehabilitation Programme's (NRBP) goal of cleaning and maintaining Nairobi River.<sup>25</sup>

The research is also expected to draw attention either the success or failure of the institutions governing Nairobi River in implementation capacity and by analogy water basins generally in Kenya. Depending on the finding the research will provide either a basis for reform for Nairobi River institutions or example for other institutions facing institutional failures in water resource management.

Water resource and irrigation are among the sectors which Kenya hopes to improve in realisation of Kenya's Intended Nationally Determined contributions (INDC) to reduce Green House Gases by 30% in 2030.<sup>26</sup> This research is important in contributing towards the achievement of INDC's.

Ultimately it is hoped that this study will make a significant contribution towards providing pointers towards the realization of the right to clean and healthy environment under the constitution<sup>27</sup> and promotion of environmental conservation under the social pillar of our development blueprint in Kenya.<sup>28</sup>

Finally, it is hoped that this study will contribute to valuable knowledge in the environmental field specifically the role institutions play in the enforcement of law and management of water pollution.

### 1.7. Theoretical framework

The research has a number of objectives including analysing the relationship between institution and the history of institutions in attempt to understand the way in which institutions perform their function. **Neo-institutionalism and Historical institutionalism HI** will form basis for which the above objectives will be fulfilled relationships between institutions and the history of institutions will be used to explain the way in which they function.

**Neo- intuitionism** is considered a revival of, and a variation from, the traditional institutionalism which had its efforts concerted towards legal institutions and as such was

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<sup>25</sup> Ministry of Environment & Mineral Resources, Office of the Minister, NRBP: <http://www.basel.int/Portals/4/Basel%20Convention/docs/convention/XX%20Anniversary/Press%20kit/Kenya%20Project%20leaflet.pdf> on 22<sup>nd</sup> March 2016.

<sup>26</sup> Kenya's Intended Nationally Determined Contribution (INDC), 5.

<sup>27</sup> Article 42, *Constitution of Kenya*.

<sup>28</sup> Available at, <http://www.vision2030.go.ke/index.php/vision/> on 19<sup>th</sup> Dec 2015.

considered narrow.<sup>29</sup> Neo institutionalism proposes that institutions are comprised of rules and organised practices embedded in structures of meaning and prescribe appropriate rules and behaviour.<sup>30</sup>

The theory further analyses the role that the institutions play in influencing behaviour and considers that institutions work within an institutional environment where they make efforts towards maintaining of a status quo.<sup>31</sup> This feature of the neo-intuitionism will play a major role in understanding the behaviour of institutions governing management of pollution as influenced by other institutions.

Another important theme of neo-institutionalism to the topic of research is the critic within institutional environment of the perceived political coherence and an exploration of how change can be effected in institutional interactions among competing structures is considered.<sup>32</sup> This will be useful in discussing the creation of multiple institutions under the Water Act, EMCA and the Ministry Water and Irrigation and the subsequent implications of the expectance of coherence in the function because the laws prescribe for such coherence without giving consideration to the political environment in which these institutions operate.<sup>33</sup>

**Historical institutionalism HI** is under the umbrella of Neo-intuitionism which proposes the historical unfolding of institutional affect the way in which they develop as regularized patterns and routinized practices subject to a 'logic of path-dependence.'<sup>34</sup> This theory is critical in analysing the ways in which institutional structures governing Nairobi River act and have developed in gaining legitimacy and influencing behaviour of the actors in pollution.<sup>35</sup> In Kenya's history water resource management was previously in the realm of Ministry of Water and state control before passing the mandate to WRMA<sup>36</sup>, this theory's

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<sup>29</sup> Klein P, 'Institutionalism as a school; A consideration' 2 *Journal of Economic Issues* (1990), 385.

<sup>30</sup> Rhodes A, Binder S, Rockman B, *The Oxford Handbook of Political Institutions*, Oxford University Press, Oxford, 2006, 3.

<sup>31</sup> Junker L, 'The theoretical foundations of Neo-institutionalism' 27 *the American Journal of Economics and Sociology* (1968), 204.

<sup>32</sup> Oslen J, March J, 'Elaborating the New Institutionalism' *Centre for European Studies* (2005), 17.

<sup>33</sup> Moraa H, 'Water governance in Kenya: Ensuring Accessibility, Service delivery and Citizen Participation' *Ihub Research*, 21.

<sup>34</sup> Schmidt A, 'Taking ideas and discourse seriously: explaining change through discursive institutionalism as the fourth 'new institutionalism'' 2 *European Political Science Review* (2010), 3.

<sup>35</sup> Bandaragoda J, 'A Framework for Institutional Analysis for Water Resources Management in a River Basin Context' *International Water Management Institute working Paper 5*, 2000, 45.

<sup>36</sup> Nyanchaga E N, 'Water Governance Sector; Comparing development in Kenya, Nepal, South Africa and Finland; Historical timeline in water governance in Kenya' 32

importance lays in providing understanding of how historical ties influence working of institution.

### 1.8. Literature review

The idea that water crisis is a crisis of water governance sits within environmental dialogue as common knowledge.<sup>37</sup> Water governance is dependent on, among other factors, the strength of institutions and the efficiency, transparency and sustainability of such institutions.<sup>38</sup> According to UNEP, Kenya is not novel to the problem of poor institutional frameworks in water management as it has been a subject of discussions by academics, governments and policy makers from the discourse independence.<sup>39</sup> The UN WWAP in 2006 found that water resources' institutional framework continue to suffer from overlap of functions and lack of proper authoritative capacities for bodies created under the Water Act leading to constrains in the enforcement.<sup>40</sup>

Dr Ezekiel Nyanchaga elaborates on the different legislative and institutional regimes in water governance that Kenya has undergone from the colonial period. In his papers he provides intricate details of institutional structures at every point of evolution backed up by the contextual basis for such shifts.<sup>41</sup> In one of his recent presentation he discusses the implications of the 2010 Constitution on Water governance.<sup>42</sup> The shift of emphasis for water provision to National and County Governments from the MWI and WASREB possess question who is better suited to deal with the service provision. It is Dr Ezekiel's contention that institutions established under the Water Act should be the lead authorities accountable for water services and management. In his presentation he introduces the challenges in the institutional framework as a result if the 2010 constitution; Ideas on newly established NLC and their role, devolved governments, lack of cross-sectional institutional monitoring are all discussed. As a point of departure from areas covered by the author, the paper will cover a theoretical basis as a foundation to understanding the institutional structures in Water Resource. Additionally the

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<sup>37</sup> UN World Water Development Report 2, *Water a shared Responsibility*, 17.

<sup>38</sup> Water Partnership Programme (WPP) & African Development Bank, *Water Sector Governance in Africa: Theory and Practice*, 2006, vii.

<sup>39</sup> UNEP & African Center for Technological Studies, *The Making of a framework: Environmental Law in Kenya*, English Press Limited, 2001, 105.

<sup>40</sup> UN WWAP, Kenya National Water Development Report.

<sup>41</sup> Nyanchaga E N, 'Water Governance Sector; Comparing development in Kenya, Nepal, South Africa and Finland; Historical timeline in water governance in Kenya' 26.

<sup>42</sup> Nyanchaga E, "Importance of Water in Kenya Challenges and Reforms" Tampere University of Technology, 2011, Available at:

[http://www.uta.fi/ky/tutkimus/historia/projektit/argumenta/merkitys/Kenya\\_Eki\\_190811.pdf](http://www.uta.fi/ky/tutkimus/historia/projektit/argumenta/merkitys/Kenya_Eki_190811.pdf)

research will look at water resources with Nairobi River as the case study which differs from the focus on water service provision and water resource management in the same discussions.

In addition to his works, Migai Akech provides useful insight to both the management of water resources and service allocation institutions before and after the Water Act 2002. The author acknowledges an overlap in institutions created in the Water Act.<sup>43</sup> He analyses the water service provision and establishes the problem of the institutions in promoting democratisation of water service provision. He however establishes problems in institutional management governing water in general, which includes the water resources.

The GIZ institute carried out a research with the aim of determining the nature of water governance in Kenya.<sup>44</sup> The paper covers different aspects of water governance with a dedicated section on water resource institutions; the author acknowledges an improvement in the water management since 2002 but further discusses the elements of corruption and institutional incapacity and reluctance that continues to cripple the water governance in Kenya.<sup>45</sup> The paper is of importance it provides a holistic view of the water sector and institutions under the Water Act in Kenya and further provides recommendations based on Uganda's water sector.<sup>46</sup> This research will add on to the author's findings by looking into other institutions, other than those provided under the Water Act, that affect water conservation in water resource management in an attempt to provide a wider view of the interactions in management; this will be in line with the institutes acknowledgement that water governance cannot be analysed from an isolated point of view.<sup>47</sup> Additionally no literature exists of new institutions under the Water Act of 2016.

### **1.9. Research design & methodology**

The research will employ qualitative research by mainly using secondary data based on a case study, Nairobi River. The researcher will further historical research methods with extensive literature review.

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<sup>43</sup> Migai A, 'Governing water and sanitation in Kenya: public law, private sector participation and the elusive quest for a suitable institutional framework'9.

<sup>44</sup> Nordmann D, Peters P, Werchota R, Giz Water Sector Reform Programme, *Good governance in the Kenyan water sector: Policies, pipes and the participation of the people water governance practices on the ground*, 2012, 6.

<sup>45</sup> Nordmann D, Peters P, Werchota R, Giz Water Sector Reform Programme, *Good governance in the Kenyan water sector: Policies, pipes and the participation of the people water governance practices on the ground*, 20.

<sup>46</sup> Nordmann D, Peters P, Werchota R, Giz Water Sector Reform Programme *Good governance in the Kenyan water sector: Policies, pipes and the participation of the people water governance practices on the ground*, 37.

<sup>47</sup> Nordmann D, Peters P, Werchota R, Giz Water Sector Reform Programme, *Good governance in the Kenyan water sector: Policies, pipes and the participation of the people water governance practices on the ground*, 25.

The use of historical research involves analysing the evolution of research subject to arrive at causes and effects; this combined with literature review is suitable for this research as it will enable the researcher to understand the institutions governing Nairobi River management within their historical context which is the subject of chapter 2 of the research.

The use extensive use and analysis of literature will be used throughout the research which will be useful in determining the relationship between institutions and an ideal based on the Kenyan constitution.

The research will be done on approval by Strathmore Law School and will be subject to any further approvals required by the institutions in the course of collecting information.

### **1.10. Limitations**

The main limitation of the research is of informational nature. The research objectives include the analysis of institutions and their performance and as such require a lot of literature which may be limited.

The research further requires information from institutions that are govern Nairobi River, especially in fulfilment of objective 2 on determining the extent to which the institutions have fulfilled their mandate. This requires honest and accurate data in order to find correct findings, which may not be the case as most primary data may be subject to bias.<sup>48</sup>

Additionally, the research also involves interviews from officials in the water institutions and unavailability of some interviewees is foreseen due to busy schedules.

### **1.11. Chapter breakdown**

The first chapter of the research will contain the entire research proposal which is an introduction to the subject of the dissertation and the content of the problem.

The second chapter will contain the historical background which will create a basis for understanding the institutional frameworks governing Water Resources and further the evolution pollution control. In this chapter the aim is to understand the evolution of Water Resource Management.

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<sup>48</sup> Grix J, *Foundations of Research*, Palgrave Macmillan, New York, 2004, 53

The third chapter will focus on the current institutional mechanisms that governs the Nairobi River. In this chapter all the institutions that have a role in the control of pollution and the challenges they face in executing their mandate will be discussed.

The next chapter will look into other jurisdictions and international best practices with the aim of providing comparison from successful nations in dealing with pollution control of water resources.

The final chapter will conclude the arguments put forward in the research and if the hypothesis is proven, provide recommendations on better institutional management for water pollution problem in Nairobi River and the prospects that the Water Act of 2016 holds for the water resource management.

#### **1.12. Time line/duration**

The research is intended to take place within 6 months to a maximum of 11 months beginning in April 2016 to January 2017.

## CHAPTER 2: HISTORY OF WATER RESOURCE MANAGEMENT INSTITUTIONS

The present chapter will discuss the history of water institutions in four phases; i) Pre-colonial period ii) Colonial period, iii) post-colonial period to present and iv) Water Act, 2016. The discussion is important in understanding the institutional transitions, developments and its role in the functioning of the present day institutions.

At the onset of this discussion it is important to understand that institutions that manage water resources which is main focus of this paper is different from institutions that manage water supply. However the two areas were once managed by the same institutions and some of history of institutions governing water supply is significant and will therefore form part of the subsequent discussions.

### 2.1. Pre-colonial period

The pre-colonial period was generally characterized by geographically distinct social constructions of organization similar to present day institutional frameworks. The institutional framework was varied because of Kenya's history which dates back to 200 BC when different communities began to migrate into Kenya, each with their own culture, language and social-political structures.<sup>49</sup> Each community was governed by customary law which has continued to exist despite the replacement with modern forms of laws introduced during and after the colonial period.<sup>50</sup>

The most distinct characteristics of the institutional frameworks governing water resources were that they were informal and geographically distinct.<sup>51</sup> The informality of institutional frameworks was highly effective as the size of communities governed were very small. Each territory had its own informal institutions and very few interactions existed between different communities due to scarce population. However social negotiations were used where different communities needed to allocate water rights between each other.<sup>52</sup> An important feature of the water itself was that is that it was considered a universal right and

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<sup>49</sup> <http://www.kenyaembassy.com/aboutkenyahistory.html> on 2nd January 2017.

<sup>50</sup> Craig D and Gachenga E, 'The recognition of indigenous customary law in water resource management' 20 *Journal of Water Law*, 2010, 278.

<sup>51</sup> Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, Tampere University Press, 2016, 26.

<sup>52</sup> Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, 27.

therefore all water rights and management was done in accordance with the idea that every person and community was entitled to water and further that water is a common good.<sup>53</sup>

Despite the existence of customary law and its institutions, water pollution was not a major problem which explains the lack of stringent means of conserving water resources and preventing pollution.

## 2.2. Protectorate and colonial Kenya

In 1885, Kenya was declared a British protectorate leading to significant developments in the landscape of institutions governing water in general. Among the key developments was the construction of Kenya-Uganda railway which pioneered water supplies therefore leading to the need for water supply administration.<sup>54</sup> At this point the institutional bodies regulating water were largely focused on water supply and access to water as opposed to water resource management.<sup>55</sup> Notable of the then existent institutions governing water supplies was Hydraulic Branch of the Public Works Department under the foreign office of the British.<sup>56</sup>

In early 1900's there was increased sewerage problems due leading to breaking out of diseases and epidemics and therefore created a need for administration of sanitation whose form of redress was ineffective as it was limited to campaigns by interested parties as well as use of coercion by ruling government.<sup>57</sup> In 1907 the bucket latrine systems was introduced in major townships as a means of conservancy.<sup>58</sup>

During the protectorate period the 1894 Land Acquisitions Act, 1899 Order in Council, 1902 and 1915 Crowns Land Ordinance were enacted and were significant in determining the way in which land rights, including water rights were held and governed.<sup>59</sup> Under the 1984 Indian Land Acquisition and the 1989 Order in Council, all the land in the British East Protectorate was put under the crown.<sup>60</sup> The effect was that all the control and power to allocate water rights to manage water resources were held by the crown. However this position has

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<sup>53</sup> Ogendi G and Ong'oa I, 'Water Policy, Accessibility and Water Ethics in Kenya' 7(1) *Santa Clara Journal of International Law*, 2009, 181.

<sup>54</sup> Wamicha W and Mwanje J, *Environmental Management in Kenya; Have the national conservation plans worked?* Environmental Forum Publication Series, 2000, 26.

<sup>55</sup> Ministry of Water Resources, *Session paper 1 of 1999 on National Policy on Water Resource Management and Development*, 9<sup>th</sup> April 1999, 3.

<sup>56</sup> Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, 34.

<sup>57</sup> Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, 34.

<sup>58</sup> Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, 35.

<sup>59</sup> Wamicha W and Mwanje J, *Environmental Management in Kenya; Have the national conservation plans worked?* 26.

<sup>60</sup> Sec 3; Sec 16, *Land Acquisition Act (Act No. 1 of 1984)*.

greatly evolved with the Constitution of Kenya vesting all land ownership with the people of Kenya.<sup>61</sup>

Beginning 1920, when Kenya became a colony, the administration of water supply and water resources was governed by the Crown; this era was characterized by erosion of previous cultural systems put in place and replacement with colonial rules.<sup>62</sup>

In 1929, the Water Ordinance was enacted, this was the first water legislation in Kenya. The making of the law was a push by the white settlers who wanted to get water rights that were considered crucial in agriculture.<sup>63</sup> The ordinance underwent criticism due to the unfair provisions in favor of white settlers and the inadequate protection of Africans which caused a delay in the passing of the legislation.<sup>64</sup> In 1935 the Water Act was enacted after the Water Board was put in charge of surface water and the riparian ownership remained under the Native Land Trusts Board who held land on behalf of Africans.<sup>65</sup>

The Water Board was therefore created by the water ordinance and was in charge of water permits, management of surface waters and enforcement of all laws.<sup>66</sup> Other important institutions in charge of water sector included; Water Resource Authority in charge of water supply, Water Apportionment Board and Public Health Authority.<sup>67</sup>

In 1953, the Water Undertaker rules and Pollution (Water general) rules were enacted and made enforceable through Water Resource Authority and marked the first rules governing pollution in Kenya.<sup>68</sup>

### 2.3. Post-colonial period to 2015

The water policy and institutional framework after independence was largely based on the participation of all stakeholders; Department of Water, Non-governmental Institutions, private parties and the local users; this was largely influenced by the *harambee spirit* under the

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<sup>61</sup> Article 61, *Constitution of Kenya*.

<sup>62</sup> Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, 31.

<sup>63</sup> Dellapena J and Gupta J, *The Evolution of the law and politics in water*, Springer Science, Amsterdam, 2009, 111.

<sup>64</sup> Nyanchaga E, *History of Water Supply in Kenya (1895-2005); lessons and futures*, 33.

<sup>65</sup> Dellapena J and Gupta J, *The Evolution of the law and politics in water*, 112.

<sup>66</sup> *Water Ordinance* (1929).

<sup>67</sup> Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, 55.

<sup>68</sup> Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, 57.

Kenyatta Government.<sup>69</sup> This was further pushed by the adoption of the sessional paper 10 of 1965 which promoted the participation of communities at local level.<sup>70</sup>

In 1964, Kenya adopted a 5 year development plan (1964-1969) which was carried forward from the colonial period leading to the implementation of the Manzoni recommendations.<sup>71</sup> The Manzoni recommendations were as a result of a report on Public Works Department by Sir Herbert Manzoni on 1957 (discussed in 2.2); this led to the creation of the Department of Water Development under the Ministry of Agriculture, the main governmental institution in charge of water sector until 1974.<sup>72</sup>

Government intervention in water governance can be traced to the launch of the National Water Master Plan in 1974.<sup>73</sup> The main aim of the 1974 Policy was to make water available at a reasonable distance for all the households by 2000.<sup>74</sup> The policy further aimed at streamlining actors in charge of water supply and sanitation.<sup>75</sup> In order to fulfil the objectives of the policy the Department of Water Department under the Ministry of Agriculture was upgraded to an independent Ministry of Water which marked the birth of the first ever independent Ministry in charge of Water.<sup>76</sup> Among the ministry's first move was the taking over of government, county-led and self-help water schemes.<sup>77</sup> This marked the beginning of the deviation from initial multi-stakeholder governance to a more centralized governance of water.

In the same year, 1974, the first water act was enacted, the Water Act (CAP 372).<sup>78</sup> The Act was however not so different from the water ordinance as it provided for; the water rights were vested in the government;<sup>79</sup> the Water Resource Management in charge of water supply;<sup>80</sup>

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<sup>69</sup>Ogendi G and Ong'oa I, 'Water Policy, Accessibility and Water Ethics in Kenya' 185.

<sup>70</sup>Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, 45.

<sup>71</sup>Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, 44.

<sup>72</sup>Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, 44.

<sup>73</sup>Mumma A, 'Kenya's new water law: an analysis of the implications for the rural poor' Workshop on African Water Laws: Plural Legislative Frameworks for Rural Water Management in African, Johannesburg, 26-28<sup>th</sup> January 2005, 5-2.

<sup>74</sup>Mumma A, 'Kenya's new water law: an analysis of the implications for the rural poor' 5-3.

<sup>75</sup>Nyanchaga E, *History of water supply in Kenya (1895-2005); lessons and futures*, 30.

<sup>76</sup>[http://www.water.go.ke/?page\\_id=6](http://www.water.go.ke/?page_id=6) on 2<sup>nd</sup> January 2016.

<sup>77</sup>Ogendi G and Ong'oa I, 'Water Policy, Accessibility and Water Ethics in Kenya' 186.

<sup>78</sup>Ogendi G and Ong'oa I, 'Water Policy, Accessibility and Water Ethics in Kenya' 186.

<sup>79</sup>Sec 3, *Water Act* (CAP 372).

<sup>80</sup>Sec 20, *Water Act* (repealed).

the Water Apportionment Board under the Water Resource Management.<sup>81</sup> The Act further provided for decentralization through the Catchment Boards in charge of catchment areas.<sup>82</sup>

In the late 1970's to the 1980, increase in population, haphazard human settlement and forest destruction led to deterioration of both water quality and quantity.<sup>83</sup> During this period, water pollution problem was becoming apparent as the government had focused more on water supply development and neglected water conservation and pollution.<sup>84</sup> In the late 1980's there was a shift from government-led water supply initiative to privatization, this initiative was mainly pushed through Structural Adjustment Programmes.<sup>85</sup>

In 1992, the Ministry of water released in Delineation Report and updated the National Water Master Plan of 1974 with the help of the Japanese Government and Sweden Government who conducted studies between 1990-1992 and 1976-1981 respectively.<sup>86</sup> The Delineation report was instrumental in defining roles, function and responsibilities of principal actors.<sup>87</sup> The National Water Master Plan set out long term plans for reforms in the water sector.<sup>88</sup> It further recommended that the ministry develop a policy on water which led to the initiation of discussions leading to the Sessional Paper 1 of 1999 on National Policy on National Water Resource Management and Development.<sup>89</sup> The policy of 1999 paper became one of the most instrumental documents in reforming the water sector, all of which shall be discussed in the subsequent sections. Among the most significant recommendations relevant in the development of institutions was the recommendation requiring a reform in the institutional mechanisms created by the Water Act of 1974 to enable coordination of all the various

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<sup>81</sup> Sec 25, *Water Act (repealed)*.

<sup>82</sup> Sec 23, *Water Act (Repealed)*.

<sup>83</sup> Ogutu J, 'A survey of Corporate Governance Practices in the Water Sector in Kenya' Unpublished, University of Nairobi, Nairobi, 2009, 5.

<sup>84</sup> Ministry of Water Resources, *Session paper 1 of 1999 on National Policy on Water Resource Management and Development*, 6.

<sup>85</sup> Kisima, *Will SWAps fix the water sector?* January 2017, 2.

<sup>86</sup> Ministry of Water Resources, *Session paper 1 of 1999 on National Policy on Water Resource Management and Development*, 3.

<sup>87</sup> Juuti P, Katko T and Vuorinen H, *Environmental History of Water: Global views on community water supply and sanitation*, IWA publishers, London, 2009, 293.

<sup>88</sup> Juuti P, Katko T and Vuorinen H, *Environmental History of Water: Global views on community water supply and sanitation*, 293.

<sup>89</sup> Ogutu J, 'A survey of Corporate Governance Practices in the Water Sector in Kenya' 5.

participants;<sup>90</sup> it further specified that the ministry in charge of water should be limit its functions to coordination rather than direct participation.<sup>91</sup>

In 1999, a pivotal move in the conservation of the environment was made by the enactment of the Environmental Conservation and Management Act.<sup>92</sup> The Act created one of the most fundamental institutions in environmental conservation, National Environmental and Coordination Authority which was charged with the function of general supervision and coordination of all environmental lead agencies.<sup>93</sup> It further consolidated former sectoral laws dealing with various components of the environment, the deteriorating state of Kenya's.<sup>94</sup>

In 2002, Kenya undertook a policy reform that was marked by the enactment of Water Act 2002 reshaping former institutional structures governing water.<sup>95</sup> The main principles informing the law were community participation, separation of roles and sustainable development.<sup>96</sup> The most significant change for institutions was the shift from centralized governance to a more decentralized systems and polycentric order.<sup>97</sup> The term polycentric here refers to the organization by establishing several centers of authority or control.<sup>98</sup>

The Act created two main regulatory bodies; Water Resource Management Authority (WRMA) and the Water Service Regulatory Board (WASREB).<sup>99</sup> WRMA was charged with the main obligation of managing the water resources which involves the issuance of permits, conservation of water quality, information gathering and policy recommendations for water resources.<sup>100</sup> WASREB on the other hand was mandated with the supply of quality and safe water.<sup>101</sup> The minister in charge of water was given less power in direct management of water

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<sup>90</sup>Ministry of Water Resources, *Session paper 1 of 1999 on National Policy on Water Resource Management and Development*, 46.

<sup>91</sup>Ministry of Water Resources, *Session paper 1 of 1999 on National Policy on Water Resource Management and Development*, 44.

<sup>92</sup> [http://www.nema.go.ke/index.php?option=com\\_content&view=article&id=5&Itemid=134](http://www.nema.go.ke/index.php?option=com_content&view=article&id=5&Itemid=134) on 29<sup>th</sup> December 2016.

<sup>93</sup> Sec 9, *Environmental Management and Coordination Act*.

<sup>94</sup> [http://www.nema.go.ke/index.php?option=com\\_content&view=article&id=5&Itemid=134](http://www.nema.go.ke/index.php?option=com_content&view=article&id=5&Itemid=134) on 29<sup>th</sup> December 2016.

<sup>95</sup> Dell'Angelo J, McCord, Gower D, Carpenter S, Caylor K and Evans T, 'Community Water Governance on Mount Kenya: An Assessment Based on Ostrom's Design Principles of Natural Resource Management' 30(1) *International Mountain Society*, 2016, 1.

<sup>96</sup> Dell'Angelo J, McCord, Gower D, Carpenter S, Caylor K and Evans T, 'Community Water Governance on Mount Kenya: An Assessment Based on Ostrom's Design Principles of Natural Resource Management' 2.

<sup>97</sup>McCord P, Dell'Angelo J, Baldwin E and Evans T, 'Polycentric Transformation in Kenyan Water Governance: A Dynamic Analysis of Institutional and Social-Ecological Change' 00(00)*Policy Studies Journal*, 2016, 1.

<sup>98</sup> The Free Dictionary, 8<sup>th</sup> Ed.

<sup>99</sup> Sec 7; Sec 46, *Water Act* (8 of 2002)

<sup>100</sup> Sec 8, *Water Act* (2002).

<sup>101</sup> Sec 47, *Water Act* (2002).

supply and resources and instead given overall supervisory powers as well as policy-making powers.

It is worth-noting that the Water Act of 2002 was a major advocate of community participation and therefore introduced a number of mechanisms to ensure that communities participate in the governance of water.<sup>102</sup> The regional bodies created at the community level may be categorized as either the under WRMA or WASREB. Under WRMA, the Catchment Area Advisory Authority (CAAC) is the main regional construction of the Water Act 2002 and is in charge of water conservation and permits in catchment areas.<sup>103</sup> Currently there are six main CAAC's; Athi, Ewaso Nyiro, Lake Victoria South, Lake Victoria North, Tana and Rift-valley.<sup>104</sup> Another important regional body is the Water Resource's Users Association, which is created by local users for the co-management of water resources.<sup>105</sup>

The Ministry of Water continued to evolve since its establishment in 1974: In 1992 it was merged with other departments to form the Ministry of Land Reclamation and Regional Development; in 1998 it was merged again to form the Ministry of Water Resources; In 2001 the Ministry of Water Resources was merged with the Ministry of Environment and Natural Resources; in 2003, the Department of Irrigation and Land Reclamation and the Department of Water were brought together to form the Ministry of Water Resources Management and Management in order to consolidate the responsibility for the management and development of water resources, Irrigation, Drainage and Land Reclamation in one.<sup>106</sup> The ministry was renamed Ministry of Water and Irrigation and continued to function as such until the consolidation of all the environmental ministries, that is, the Ministries of Environment and Mineral Resources, Forestry and Wildlife, Water and Irrigation and Regional Development, to form Ministry of Environment, Water and Natural Resources (MEWNR) in line with the 2010 Constitution of Kenya.<sup>107</sup> The latest move was the split of MEWNR into the current Ministry of Water and Irrigation.

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<sup>102</sup> UN WWAP, Kenya National Water Development Report; Prepared for 2<sup>nd</sup> UN World Water Development Report: 'Water, a shared responsibility' 6.

<sup>103</sup> Sec 16(2), *Water Act*.

<sup>104</sup> <http://www.wrma.or.ke/index.php/wrma-regional-offices.html> on 6th January 2017.

<sup>105</sup> Water Resource Management Authority, *Strengthening regulations for sustainable water resources management in Kenya*, March 2015, 15.

<sup>106</sup> [http://www.water.go.ke/?page\\_id=6](http://www.water.go.ke/?page_id=6) on 2<sup>nd</sup> January 2016.

<sup>107</sup> [http://www.water.go.ke/?page\\_id=6](http://www.water.go.ke/?page_id=6) on 2<sup>nd</sup> January 2017.

#### 2.4. Water Act, 2016.

On September 2016, the Water Bill of 2014 was passed into law.<sup>108</sup> The main aim of the law was to streamline all legislation with the 2010 Constitution of Kenya.<sup>109</sup> The Act introduced a number of changes key among them is the ownership of water resources by the national government in trust for the people of Kenya,<sup>110</sup> previously water resources were owned by the government subject to rights granted by any other legislation.<sup>111</sup> Ownership is important as it forms the basis upon which the parties derive their rights to water and the manner in which water resources are allocated.

The Institutional framework in the new Act has maintained the same form of decentralized and integrated approach to governance while introducing a number of changes; Water Resource Management (WRA) is the authority in charge of water management and will take over from WRMA;<sup>112</sup> the authority maintains most of its functions under the Water Act of 2002 but places emphasis on the role of WRA in the formulating of policies for the management of water resources,<sup>113</sup> the coordination of all regional, national and international bodies that participate in the management of water resources<sup>114</sup> and the mitigation and management of floods.<sup>115</sup>

The Water Services Regulatory Board maintained the same name in the new Water Act and further increased their duties to include; the maintenance of an information database for water services systems,<sup>116</sup> public reporting on matters of water supply and sewerage services and performance of relevant water sectors,<sup>117</sup> issuance of model Article and Memorandum of Association for companies to be licensed by the authority.<sup>118</sup> The mandate given to the newly established WARSEB is far more precise and introduces an important aspect of public reporting, a form of accountability.

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<sup>108</sup> <http://www.president.go.ke/2016/09/18/state-house-spokesperson-weekly-briefing-sunday-18th-september-2016/> on 16<sup>th</sup> January 2016.

<sup>109</sup> Remarks by the Cabinet Secretary, Ministry of Water and Irrigation, Sir Eugene Wamalwa during the official opening of the ministerial performance review retreat at Waterbuck Hotel on 13<sup>th</sup> October 2016, 5.

<sup>110</sup> Sec 5, *Water Act* (Act No 43 of 2016).

<sup>111</sup> Sec 3, *Water Act* (2002).

<sup>112</sup> Sec 11, *Water Act*.

<sup>113</sup> Sec 12 (a), *Water Act*.

<sup>114</sup> Sec 12 (h), *Water Act*.

<sup>115</sup> Sec 12 (a), (g), *Water Act*,

<sup>116</sup> Sec 72 (1) (i), *Water Act*.

<sup>117</sup> Sec 72(1) (m), *Water Act*.

<sup>118</sup> Sec 72 (1) (e), *Water Act*.

The new Water Act has introduced a number of new institutions and changed the names and mandate of several existing institutions; The CAACs is replaced by the Basin Water Resource Committee<sup>119</sup> whose composition is different as it includes representatives from the county government,<sup>120</sup> however the functions of the Basin Water Resource Committee are similar to CAAC; the Water Sector Fund established by the new Act<sup>121</sup> replaces Water Services Fund<sup>122</sup> along with a change of specific focus of the fund being county government.<sup>123</sup>

The new Water Act marks a significant achievement in the water sector in line with the decentralization and its proper implementation will be instrumental in the success of the Act.

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<sup>119</sup> Sec 25 (3), *Water Act*.

<sup>120</sup> Sec 26 (1) (b), *Water Act*.

<sup>121</sup> Sec 113, *Water Act*.

<sup>122</sup> Sec 83, *Water Act*, (2002).

<sup>123</sup> Sec 114, *Water Act*.

## CHAPTER 3: WATER RESOURCE MANAGEMENT; THE CASE OF NAIROBI RIVER

The focus of the present chapter is on the case of Nairobi River Basin. The chapter will discuss the extent of water pollution problem and the initiatives undertaken to curb the problem. The chapter analyses the water resource institutions governing Nairobi River and the specific roles each of the institution plays. The aim of this chapter will be to determine the different institutions that are involved in the management of Nairobi River and the challenges the institutions face in regulating water pollution.

### 3.1. Status of Nairobi River

#### 3.1.1. Background

Before the coming of the white man in 1900, Nairobi was originally referred to as was *Enkarre Nairobi* meaning cool waters in Maasai native language.<sup>124</sup> The Nairobi River was instrumental in both the naming Nairobi and the decision of the British colonialists' decision to establish their capital in Nairobi making it an important landmark in Kenya.<sup>125</sup> The river was once Africa's most important transport hub and also sustained numerous economic activities such as farming, grazing and fishing.<sup>126</sup>

Nairobi River Basin consists of three rivers; Nairobi, Mathare and Ngong River.<sup>127</sup> The River Basin is the second largest River Basin after Tana River and drains in the eastern flanks of the Rift Valley, the Aberdare ranges and the Ngong Hills and discharges into the Indian Ocean through vast semi-arid parts of Kenya.<sup>128</sup> The River transverses through a magnitude of human settlements and activities such as agricultural and industrial production.<sup>129</sup> In addition to human activity, the river boasts a wealth of faunal life comprised of birds such as Sacred ibis, Cattle egrets, pied kingfisher and African fish eagle and fish variety such as Tilapia, Catfish, Barbus and Mudfish.<sup>130</sup>

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<sup>124</sup> <http://www.city-data.com/world-cities/Nairobi-History.html> on 2nd January 2017.

<sup>125</sup> <http://www.adeanet.org/STIforum/en/content/nairobi-river-historic-landmark-nairobi> on 2nd January 2017.

<sup>126</sup> <http://www.adeanet.org/STIforum/en/content/nairobi-river-historic-landmark-nairobi> on 2nd January 2017

<sup>127</sup> Kounkuey Design Initiative, *Site Settlement, Watershed; Nairobi River Basin Baseline Report*, 29th June 2012, 21.

<sup>128</sup> Kithiia S, 'An assessment of water quality changes within the Athi and Nairobi river basins during the last decade' *Water Quality and Sediment Behaviour of the Future: Predictions for the 21st Century*, July 2007, 205.

<sup>129</sup> Kithiia S and Ogwenyi G, 'Some problems of water quality degradation in the Nairobi River sub-basins in Kenya' *243 AHS Publishers*, 1997, 121.

<sup>130</sup> Kounkuey Design Initiative, *Site Settlement, Watershed; Nairobi River Basin Baseline Report*, 21.

Over the years the river has gained popularity for rampant pollution and was reported to be the most polluted river by the Kenya National Cleaner Production Centre (KNPC).<sup>131</sup> Nairobi Rivers are mainly polluted with uncollected garbage; human waste from informal settlements; industrial wastes (80% of Kenya's manufacturing is done within the basin), gaseous wastes from industries liquid effluents, agro-chemicals, petro-chemicals, metals and over-flowing sewers.<sup>132</sup> Other key sources of pollution have been identified as incidences of burst/blocked sewers, direct release of industrial effluent and solid waste discarded into the River.

### 3.1.2. Causes of Pollution

It is important at the onset of this discussion to understand that the causes of water pollution provides a guide towards the various institutions responsible. The following section will therefore discuss the main causes of water pollution in Nairobi River and provide a direct causal link in section B (discussion on institution governing Nairobi River) between the factor causing pollution and the institution charged with regulating the respective factor.

#### i) Informal Settlement

Top on the list of factors that has led to rampant water pollution along Nairobi Rivers is the informal settlements encroaching into the rivers.<sup>133</sup> Apart from violating the requirement of water conservation on distance between river banks and human settlements, informal settlers pollute the river by disposing garbage, domestic waste among others into the river.<sup>134</sup> Kibera Slum is an example of the largest slums in Africa with approximately 60% of Nairobi's population (2.5 million dwellers) settled along Nairobi River.<sup>135</sup> The problem of informal settlements in Kibera has been highly documented in both legal and social fields, some offering solutions involving complexities in balancing the human right to housing, the government's inability to provide housing and the prohibition of eviction. In the subsequent discussions, a number of institutions responsible for housing will be analyzed and their role in pollution determined.

#### ii) Historical factors

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<sup>131</sup> Kounkuey Design Initiative, *Site Settlement, Watershed; Nairobi River Basin Baseline Report*, 22.

<sup>132</sup> Ministry of Environment and Mineral Resources, *Nairobi River Basin Rehabilitation Program (NRBP); ten Point Strategy*, 2009, 1.

<sup>133</sup> Ministry of Environment and Mineral Resources, *Nairobi River Basin Rehabilitation Program (NRBP); ten Point Strategy*, 2.

<sup>134</sup> Kounkuey Design Initiative, *Site Settlement, Watershed; Nairobi River Basin Baseline Report*, 27.

<sup>135</sup> <http://www.kibera.org.uk/facts-info/> on 2<sup>nd</sup> January 2017.

The preventive principle in environmental law requires that state parties should avoid any activities that may lead to environment degradation,<sup>136</sup> the principle was deliberated at the Rio Conference of 1992 in acknowledgement that effects of environmental activities are mostly irreversible and that the simplest, cheapest and most effective means of conserving water is by preventing it.<sup>137</sup> Due to historical treatment of neglecting water conservation and pollution prevention, the government and related institutions are at a disadvantage as they are faced with the dilemma of reversing their past sins.<sup>138</sup> This trend is similar to treatment of environmental issues at both domestic and international law where laws are developed in response to a disasters that have already occurred.<sup>139</sup>

iii) Poor governance

According to the UN, water crisis is a governance crisis. Nairobi River Basin is governed by a complex set of political, social and legal factors.<sup>140</sup> Legal Institutions are among the factors considered under water governance and have been found to have challenges such as functional overlaps, corruption, inadequate finances and lack of proper accountability channels.<sup>141</sup> Additionally factors such as lack of synergy between the stakeholders in the water resources has led to weak institutional enforcement in the conservation of water and pollution prevention.<sup>142</sup> The challenges facing water institutions will be elaborated in detail in the subsequent section as it forms the topic of discussion.

### 3.2. Institutional Framework for Nairobi River

This section will look at the different institutions that are involved in water conservation and pollution prevention for Nairobi River Basin. The new Water Act of 2016 has introduced a number of changes in institutional structures. However most of these changes involve a change in the name of agencies while maintaining most of the functions and policies. The present discussion will therefore contain a considerable mention of the former regime.

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<sup>136</sup> Principle 14, *Rio Declaration on Environment and Development* (1992).

<sup>137</sup> United Nations Environmental Program, *Clearing the Waters: A focus on water quality solutions*, 2010, 36.

<sup>138</sup> Nyanchaga E, *History of water supply in Kenya (1895-2005): lessons and futures*, Tampere University Press, 2016, 38.

<sup>139</sup> Katherine KummerPeiry, 'The Chemical and Waste Regime as a basis for comprehensive international framework on sustainable management of potentially hazardous materials' 23 (2) *RECIEL* (2014) 176.

<sup>140</sup> Rampa F, 'Analysing governance in the Water Sector in Kenya' European Center for Development Policy Management' 3.

<sup>141</sup> Rampa F, 'Analysing governance in the Water Sector in Kenya' European Center for Development Policy Management, Discussion paper Number 124, 2011, 6.

<sup>142</sup> Ministry of Environment and Mineral Resources, *Master plan for the conservation and sustainable management of water catchment areas in Kenya*, 75.

### a) Water Resource Authority (WRA)

The Water Resource Authority (herein after referred to as the authority or WRA) is the lead authority mandated to manage Nairobi River.<sup>143</sup> Under the new Water Act, WRA has the following functions: formulation and enforcement of standards, procedures and Regulations for the management and use of water resources and flood mitigation; regulation and the management and use of water resources; enforcement of Regulations made under this Act; receiving water permit applications for water abstraction, water use and recharge and determine, issue, vary water permits; and enforce the conditions of those permits; collect water permit fees and water use charges; provide information and advice to the Cabinet Secretary for formulation of policy on national water resource management, water storage and flood control strategies; coordinate with other regional, national and international bodies for the better regulation of the management and use of water resources; and advise the Cabinet Secretary generally on the management and use of water resources.<sup>144</sup>

Pollution prevention is among the authority's main function and is captured in the Act through several mandates mentioned above, mainly the function of regulation and protection on water resource quality and protection of catchment areas.<sup>145</sup> WRA is also mandated to issue water permits through which it monitors the ways in which water is used therefore preventing pollution as institutions are ideally required to fulfil certain conditions that conserves water resources.<sup>146</sup> Key in the regulation of the pollution problem is the requirement that certain activities require permits, such activities include effluent discharge into the river which is a major cause of water pollution in the case of Nairobi River.<sup>147</sup> The Water Act is supplemented by Water Act (Resource Management) Rules of 2007 which has detailed provisions on the procedure for acquiring water permits;<sup>148</sup> and further provisions on measures applied in conserving water resources all of which are implemented by the WRA.

In executing its mandate, the water Sector in Kenya adopt Integrated Water Resource Management (IRWM) as its main governance principle.<sup>149</sup> IRWM was formally recognized and extensively discussed as to what it means in practice during the World Summit on

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<sup>143</sup> Sec 11, *Water Act*.

<sup>144</sup> Sec 12, *Water Act*.

<sup>145</sup> Sec 12 (d), *Water Act*.

<sup>146</sup> Sec 8(1) (c), *Water Act*.

<sup>147</sup> Part 1(f), Sixth Schedule, *Water Act (Resource Management) Rules* (Legal No 171 of 2007).

<sup>148</sup> Part II, *Water Act (Resource Management) Rules*.

<sup>149</sup> Water Resource Management Authority, *Integrated Water Resources Management and Water Efficiency Plan for Kenya*, August 2009, ii.

Sustainable Development in 1992 in Rio.<sup>150</sup> The Global Water Partnership defines IRWM as a process that promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.<sup>151</sup> In Kenya the principle was first captured in Session Paper No 1 of 1999 where water was recognized as both a social and economic good whose management was traditionally impaired through fragmentation amongst sectoral agencies.<sup>152</sup> WRMA's approach to water resource management considered the fact that water is a finite, vulnerable and an essential resource which should be managed in an integrated manner; the authority has therefore adopted a River Basin Approach where Nairobi River is managed along river drainage systems which follow river basin drainage areas referred to water catchment areas.<sup>153</sup>

In line with the IRWM principle, the previous water Act of 2002 gave WRMA the mandate to create Catchment areas which are managed by Catchment Area Advisory Committee (CAAC's).<sup>154</sup> CAAC's enable Water governance to be decentralized to different regions, which was an objective of WRMA. The CAACs were under the WRMA and were responsible for the following functions; water resources conservation, use and apportionment; the grant, adjustment, cancellation or variation of any permit; any other matters pertinent to the proper management of water resources.<sup>155</sup> The Nairobi River Basin is under the Athi River Catchment Area (ARCA) which is the largest catchment area with a population of 16.7 Million.<sup>156</sup> ARCA was therefore the regional representative of WRMA. The New Water Act takes a different approach by establishing Basin areas managed by Water Basin Resource Committee different from Catchment Areas discussed above.<sup>157</sup> The WBRC performs functions similar to the CAACs and catchment area will retain the same meaning as basin area in the new water Act. The functions of WBRC under the Act are; conservation, use and apportionment of water resources; the grant, adjustment, cancellation or variation of any permit; protection of water resources and increasing the availability of water; annual reporting to the users of its services and the public on water issues and their performance within the basin

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<sup>150</sup> <http://www.un.org/waterforlifedecade/iwrm.shtml> on 3rd January 2017.

<sup>151</sup> Water Resource Management Authority, *Integrated Water Resources Management and Water Efficiency Plan for Kenya*, 2.

<sup>152</sup> Ministry of Water Resources, Session paper 1 of 1999 on National Policy on Water Resource Management and Development, 15.

<sup>153</sup> Water Resource Management Authority, *Water Resource Management Authority Brief*, 2013, 2.

<sup>154</sup> Sec 16, *Water Act*.

<sup>155</sup> Sec 16(2), *Water Act 2002*

<sup>156</sup> <http://www.wrma.or.ke/index.php/wrma-regional-offices/athi/catchment-status.html> on 2nd January 2017.

<sup>157</sup> Sec 25 (1), *Water Act*.

area; collection of data, analyzing and managing the information system on water resources; review of the basin area water resources management strategy; facilitation of the establishment and operations of water resource user associations; flood mitigation activities; information sharing between the basin area and the Authority; the equitable water sharing within the basin area through water allocation plans; and any other matter related to the proper management of water resources.<sup>158</sup> From the reading of the new Act it is clear that WRBC has a wider mandate than the CAAC in terms of; requirement of the authority to report to the public on the water issues, data collection, flood mitigation and a more active role in the water availability and equitable water allocation.

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<sup>158</sup> Sec 27, *Water Act*.

### **b) National Environmental and Management Authority**

National Environmental and Management Authority is the overall authority in charge of all the lead agencies governing natural resources. NEMA is created by the Environmental Management and Coordination Act (EMCA) and charged with the following functions; (a) coordinate the various environmental management activities being undertaken by the lead agencies; take stock of the natural resources in Kenya and their utilization and conservation; establish and review in consultation with the relevant lead agencies, land use guidelines; to determine their impact on the quality and quantity of natural resources amongst other functions.<sup>159</sup>

Of importance to the topic of Water Pollution, NEMA enforces EMCA which protects water resources and wetlands by prohibiting activities such as disturbance of, introduction of plant specimen and the depositing of substance into rivers, lakes and wetlands.<sup>160</sup> Environmental Management and Co-Ordination (Water Quality) Regulations, 2006 supplements the EMCA in conserving water and pollution prevention; NEMA is authorized under the regulations to issue effluent licenses therefore contributing to pollution prevention.<sup>161</sup>

In line with their goal to restore Nairobi River Basin, NEMA launched a project, Adopt-a-river initiative, which aims at strengthening the links between the curricula and addressing real sustainability challenges in Kenya.<sup>162</sup> The Initiative entails the mobilizing and empowering students, community based youth groups and other interested institutions who are expected to adopt a nearby river and monitor water pollution levels at designated points and undertake its restoration and conservation.<sup>163</sup> The project is an attempt by NEMA to conceptualize the principle of participation where participation of all stakeholders in the management of water resources is adopted.

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<sup>159</sup> Sec 9(2), *Environmental Management and Coordination Act*.

<sup>160</sup> Sec 42(1), *Environmental Management and Coordination Act*.

<sup>161</sup> Sec 16, *Environmental Management and Coordination (Water Quality) Regulations*.

<sup>162</sup> [http://www.nema.go.ke/index.php?option=com\\_content&view=article&id=57&Itemid=157](http://www.nema.go.ke/index.php?option=com_content&view=article&id=57&Itemid=157) on 3<sup>rd</sup> January 2017.

<sup>163</sup> [http://www.nema.go.ke/index.php?option=com\\_content&view=article&id=57&Itemid=157](http://www.nema.go.ke/index.php?option=com_content&view=article&id=57&Itemid=157) on 3<sup>rd</sup> January 2017.

### c) Ministry in charge of Water Resources

Currently the Ministry of Water and Irrigation (MWI) is in charge of water resources in Kenya.<sup>164</sup> The ministry has a number of statutes from which it derives its mandate to contribute towards water conservation of water resources. The Ministry is mandated to publish National Water Management Strategy which is instrumental in water conservation.<sup>165</sup> The National Water Management Strategy of 2007 was the government's first strategy developed by the ministry; it provides for prevention of water pollution at source and the recycling of waste in order to reduce the toxicity of water.<sup>166</sup> The Strategy further recognizes that the government through the ministry in charge of water has the following responsibilities in executing the strategy; completion of the process of policy development, mobilizing resources for implementation, Account for funds and monitoring and evaluating activities of institutions. The second National Water Resource Management Strategy (2013-2017) was prepared by the Ministry of Environment which was responsible for water resources at the time.<sup>167</sup>

Of importance is the ministry's mandate to make rules and regulations that are required to ensure that the Water Act is effective.<sup>168</sup> The ministry of Water and Irrigation gazetted the Water Resource Management Rules in 2006 which has played an instrumental role in providing details on the execution of specific provisions of the Water Act.

The Environmental Management and Coordination Act prescribes certain functions to the minister in charge of water resources that play a crucial role in the management of water resources. The minister in consultation with lead authorities and other stakeholders is mandated to formulate orders, rules and regulations prescribing the manner in which rivers, lakes and wetlands should be managed; of particular interest to role of the ministry in pollution prevention, the Act provides that the ministry may provide for contingency plans for accidental discharges of pollutants into the river.<sup>169</sup> The Act further gives the minister the general power to make regulations in order to give the EMCA full effect.<sup>170</sup> The ministry has been successful

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<sup>164</sup> [http://www.water.go.ke/?page\\_id=6](http://www.water.go.ke/?page_id=6) on 3<sup>rd</sup> January 2017.

<sup>165</sup> Sec 10, *Water Act*.

<sup>166</sup> Ministry of Water and Irrigation, *The National Water Management Strategy (2006-2008)*, 11.

<sup>167</sup> Kenya Water Institute, *Draft Strategic Plan; transformation and growth of Kenya Water Institute*, June 2006, 4.

<sup>168</sup> Sec 142, *Water Act*.

<sup>169</sup> Sec 42(3), *Environmental Management and Coordination Act*.

<sup>170</sup> Sec 147, *Environmental Management and Coordination Act*.

in executing rules for the conservation of the environment; Water Quality Rules, Wetland Regulation, Noise Regulation, Waste Management Regulations.<sup>171</sup>

The Water Quality Regulations contains detailed provisions effluent discharge licenses into water resources,<sup>172</sup> water pollution offences and list of prohibited substances,<sup>173</sup> standard for water use for domestic,<sup>174</sup> industrial<sup>175</sup> and agricultural uses.<sup>176</sup> This regulations play an important role as it provides a roadmap through which NEMA and other EMCA institutions carry out their functions of water conservation.

#### **d) Dispute Resolving Mechanisms**

The new Water Act provides for a tribunal, the Water Tribunal which is to deal with complaints resulting from any decisions by the water authorities or the cabinet secretary.<sup>177</sup> The previous dispute resolving mechanism was the Water Appeal Board which had jurisdiction to hear any complaints of any person with propriety interest in or affected by water agencies.<sup>178</sup> The complaint mechanisms have however been found to be largely ineffective as the Water Appeal Board had never heard any cases since its inception.<sup>179</sup>

National courts have played an important role in enforcement of laws against water pollution and development of precedence in environmental cases. Currently the Environmental and Land Courts created by 2010 Constitution<sup>180</sup> has the jurisdiction to hear cases concerning issues such as environmental protection and conservation, climate, mining among other issues.<sup>181</sup> Although environmental cases are laced with technical and informational challenges that judges find difficult, the convention role of the judiciary in enforcement of law still remains and will continue to evolve with the establishment of specialized courts to deal with environmental cases.

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<sup>171</sup> [http://www.nema.go.ke/index.php?option=com\\_content&view=article&id=82&Itemid=193](http://www.nema.go.ke/index.php?option=com_content&view=article&id=82&Itemid=193) on 3<sup>rd</sup> January 2017.

<sup>172</sup> Part II, *Environmental Management and Coordination (Water Quality) Rules*.

<sup>173</sup> Sec 4, *Environmental Management and Coordination (Water Quality) Rules*.

<sup>174</sup> Sec 5, *Environmental Management and Coordination (Water Quality) Rules*.

<sup>175</sup> Part III, *Environmental Management and Coordination (Water Quality) Rules*.

<sup>176</sup> Part IV, *Environmental Management and Coordination (Water Quality) Rules*.

<sup>177</sup> Sec 119, *Water Act*.

<sup>178</sup> Sec 84, *Water Act* (2002).

<sup>179</sup> Rampa F, 'Analysing governance in the Water Sector in Kenya' European Center for Development Policy Management, Discussion paper Number 124, 2011, 10.

<sup>180</sup> Art 162(2) (b), *Constitution of Kenya*.

<sup>181</sup> Sec 13, *Environmental and Land Court Act* (Act No 19 of 2011).

#### **e) Kenya Water Institute**

Kenya Water Institute is an agency created by legislation for the promotion of education, technical expertise and research in the water sector.<sup>182</sup> The institute is at the heart of water pollution due to the technical nature of monitoring water quality and standards. The institute is to partner with both public and private institutions in providing technical expertise and acting as research centers.<sup>183</sup> The institute developed a 5 year strategic plan in 2010 which informed the plan KEWI has in enforcing its mandate; some of the challenges faced by the institute include inadequate funds and rapid changes in technology.<sup>184</sup>

### **3.3. Challenges facing former and present institutional frameworks under Water Act 2002 and Water Act 2016**

It is clear from the above discussion that there exists institutional frameworks to deal with water resource conservation and pollution prevention under the new Water Act. This section will discuss the problems that faced the former institutional arrangements under the Water Act of 2002 and whether these problems have been addressed by the new regime, in specifically controlling water pollution in Nairobi River. It will then look into possible problems that may face the new institutional regime.

#### **a) Poor Coordination and clash of agencies**

Coordination refers to the organization of different components of a complex structure to enable them to work together effectively.<sup>185</sup>

The water resource management regime is characterized by several water institutions that deal with water conservation and pollution prevention as seen from the discussions above. A close look at the laws creating the institution however reveals that there lacks a coordinated regime of institutions.<sup>186</sup>

In the 2002 regime NEMA, WRMA and MWI were the main institutions at national level charged with the following functions; overseeing all environmental lead agencies,<sup>187</sup>

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<sup>182</sup> Sec 4, *Kenya Water Institute Act* (Act No 11 of 2011).

<sup>183</sup> Sec 4(1) (a), *Kenya Water Institute Act*.

<sup>184</sup> Kenya Water Institute, *Strategic Plan 2010-2015*, 2009, 9.

<sup>185</sup> Merriam Webster, 2<sup>nd</sup> Ed.

<sup>186</sup> Ministry of Environment and Mineral Resources, *Master plan for the conservation and sustainable management of water catchment areas in Kenya*, September 2012, 75.

<sup>187</sup> Sec 9(2) (a), *Environmental Management and Coordination Act*.

managing water resources and coordinating other institutions created under the Water Act,<sup>188</sup> and general powers to ensure effective performance of all the authorities dealing with water respectively.<sup>189</sup> All the above provisions give the respective bodies some mandate in supervision and general coordination without express provision on the relationship and the extent of the independence of the institutions. Further the actual coordination of functions proved difficult under the regime with conflicts arising from institutions such as NEMA and WRMA in the issuing of permits and charges for permits (further discussed in next point, b).<sup>190</sup>

Under the New Water Act, the WRA is given more power and independence by establishing it as the main agent holding water resources on behalf of the national government<sup>191</sup> as opposed to the former regime where the minister was in charge of water resources.<sup>192</sup> Such clarification may lead to greater coordination as the sole agency in charge of water resource is limited to just one lead agency with full rights to govern water resources.

Additionally Policy developed by either the ministry or individual water institutions fail to involve relevant stakeholders in both the formulation and implementation of strategies resulting in poor enforcement due to lack of coordination.<sup>193</sup>

#### **b) Multiplicity of institutions and replication of duties**

The Water Act of 2002 created a number of institutions charged with the role of pollution prevention under the mandate of water conservation.<sup>194</sup> In pollution prevention in the case of Nairobi River, all the institution mentioned in 3.2 play an essential role; the effect of having many institutional structures coupled with poor coordination results in the lack of real accountability.<sup>195</sup> The situation in the New Water Act of 2016 is almost similar to the former

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<sup>188</sup> Sec 7, *Water Act* (2002).

<sup>189</sup> Sec 5, *Water Act* (2002).

<sup>190</sup> <http://kepsa.or.ke/2015/10/30/nema-and-wrma-seal-an-agreement-to-harmonise-waste-water-levies/> on 11<sup>th</sup> January 2017.

<sup>191</sup> Sec 6, *Water Act*.

<sup>192</sup> Sec 4, *Water Act*, 2002.

<sup>193</sup> Sweden International Development Agency, *Kenya Water and Sanitation Programme and the Water Sector Reform Programme: A Joint Sida, GTZ and Government of Kenya Mid-Term Evaluation Mission Report*, 2009, 6.

<sup>194</sup> Rampa F, 'Analysing governance in the Water Sector in Kenya' European Center for Development Policy Management, Discussion paper Number 124, 2011, 8.

<sup>195</sup> Rampa F, 'Analysing governance in the Water Sector in Kenya' European Center for Development Policy Management, Discussion paper Number 124, 2011, 8.

Act (discussed in 3.2) with the similar institutional frameworks put in place to deal with water pollution either directly or indirectly. The result is likely to be similar to the former water Act.

Additionally the creation of multiple institutions under the Water Act of 2002 created a number of conflicting provisions as to the roles of different institutions. Previously WRMA and NEMA clashed over the mandate to issue permit charges for effluent discharge which was solved by the agreement allowing NEMA to collect the fee while WRMA carries out its monitoring function without requiring further fees.<sup>196</sup> The New Water Act however maintains that WRA will collect fees and charges without clarifying the position as per the above agreement between NEMA and WRMA.<sup>197</sup> This is an indicator of issues that may hinder the effective functioning of water institutions.

### **c) Financial situation of institutions**

One of the major challenges facing the water resource management is the lack of adequate resources to deal with water pollution. An example is Nairobi River Basin Program, a program launched for the restoration of Nairobi River Basin which faced among other challenges in implementation, inadequate financing; the project cost 4.5 Billion Kenyan shillings and was funded by the African Development Bank and Government of Kenya.<sup>198</sup>

The problem was further exacerbated by the establishment of a Water Services Trust Fund in the former Water Act of 2002 which was to be applied in provision of water services in areas with inadequate water;<sup>199</sup> the Act fails to provide any sort of fund for water resource management which is an equally expensive affair.

The new Water Act however broadens the scope and nature of the fund by creating the Water Sector Fund whose fund may be applied for the following purposes;<sup>200</sup> community level initiatives for the sustainable management of water resources; development of water services in rural areas; development of water services in the under-served poor urban areas and research

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<sup>196</sup> <http://kepsa.or.ke/2015/10/30/nema-and-wrma-seal-an-agreement-to-harmonise-waste-water-levies/> on 13<sup>th</sup> January 2017.

<sup>197</sup> <http://www.cofek.co.ke/index.php/news-and-media/396-why-the-water-bill-2014-is-generating-boiling-point-temperatures-as-stakeholders-jostle-to-either-retain-or-drop-the-watered-down-final-draft?showall=1> on 13<sup>th</sup> January 2017.

<sup>198</sup> <http://awsboard.go.ke/our-projects/nairobi-river-rehabilitation/> on 13<sup>th</sup> January 2017.

<sup>199</sup> Sec 83, *Water Act* (2002).

<sup>200</sup> Sec 113, *Water Act*.

activities in the area of water resources management and water services, sewerage and sanitation.<sup>201</sup>

#### **d) Poor enforcement and complaints mechanisms**

Among the institutions charged with the function of enforcement of laws is Water Tribunal and the courts, specifically Land and Environmental Court. Previously the Water Act of 2002 provided Water Appeals Board which was dormant in the execution of its functions as it did not hear any cases since its inception.<sup>202</sup> The Water Tribunal created by the New Water Act has insignificant alterations in the jurisdiction and working of the complaint's mechanism (as discussed in 3.2 (e)) and may therefore face similar ineffectiveness in enforcing pollution prevention laws as the previous regime.

#### **e) Lack of technical knowledge and expertise**

A major determinant of a successful water enforcement regime is the presence of technical expertise and research facilities.<sup>203</sup> In Kenya, there is a challenge in the technical knowledge and technological capacity of institutions mandated to deal with water pollution prevention; the country relies largely on foreign parallel partnerships to boost technical knowledge as opposed to incorporation expertise into the existing institutional framework.<sup>204</sup> A comparative analysis of the role of technical expertise in the subsequent discussion will shed light on the important role that is played by research institutions in developing action plans and policy frameworks which are effective in the controlling water pollution. The new Water Act has not built much on empowering technical support and incorporation, additionally the Kenya Water Institute created by an Act of parliament in 2001 has not undergone much changes.

#### **f) Transition into devolution**

The New Water Act of 2016 has succeeded in the devolving of function on accordance with the 2010 constitution of Kenya.<sup>205</sup> The success of the devolution process will however depend on clear rules and regulations in governing the different roles of counties in relation to other regional and national institutions in pollution prevention.

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<sup>201</sup> Sec 114, *Water Act*.

<sup>202</sup> Rampa F, 'Analysing governance in the Water Sector in Kenya' European Center for Development Policy Management, 10.

<sup>203</sup> GIZ, *Good Practices in Water and Soil Conservation*, 2006, 9.

<sup>204</sup> Sweden International Development Agency, *Kenya Water and Sanitation Programme and the Water Sector Reform Programme: A Joint Sida, GTZ and Government of Kenya Mid-Term Evaluation Mission Report*, 7.

<sup>205</sup> Article 174, *Constitution of Kenya*.

## CHAPTER 4: COMPARATIVE STUDY

The present chapter will do a comparative study on China and United Kingdom both of which have successfully dealt with water pollution. The aim of the chapter is to draw lessons and recommendations from the above jurisdiction useful for Kenya.

### 4.1. China

China's failure in environmental management and conservation is not novel in environmental discussions. Due to its unprecedented growth in population growth and industrialization coupled with the poor planning, the country has faced numerous water pollution disasters and developed strategies in the management of water resources essential to the sustainable growth of China's economy.<sup>206</sup>

China like Kenya is characterized by environmental problems such as water pollution mainly comprised of solid waste, industrial discharges, poor sewerage systems and agricultural wastes.<sup>207</sup> The institutional framework in China is composed of a large number of complex institutions at various levels; these include national government through their Ministry of Water Resources, the provincial level, the municipal and county level, and the community level;<sup>208</sup> similar to the present integrated water regime in Kenya.

However, China is significantly different from Kenya in two aspects; its regulatory framework as it adopts pieces of specialized legislation for water pollution as opposed to Kenya's incorporation of pollution regulation into the general Acts governing different aspects of the environment such as Water Act or Environmental Management and Conservation Act;<sup>209</sup> and secondly the government owns water resources<sup>210</sup> and through the Ministry is in charge of most of the decentralized institutions charged with water resource management such as River Basin Committees which implement water policy at local level.<sup>211</sup>

Despite the differences China enforcement of water pollution prevention, specifically in restoring Lake Dianchi, will be a useful study in lending lessons for the Kenyan institutions. The current analysis will focus on the methods applied by water institutions in dealing with

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<sup>206</sup>State Environmental Protection Administration of China, *Water Pollution Prevention and Control; Successful Cases in China*, 2005.

<sup>207</sup>State Environmental Protection Administration of China, *Water Pollution Prevention and Control; Successful Cases in China*, 2005, 4.

<sup>208</sup> <http://chinawaterrisk.org/regulations/regulatory-institutions/> on 12<sup>th</sup> January 2017.

<sup>209</sup> Ogendi G and Ong'oa I, 'Water Policy, Accessibility and Water Ethics in Kenya' 179.

<sup>210</sup> Sec 5, *Water Law of the People's Republic of China* (official translation).

<sup>211</sup>Xiangcan J, 'Lake Dianchi; Experiences and Lessons learnt Brief' *Chinese Research Academy of Environmental Sciences*, 174.

water pollution in Lake Dianchi, which was previously one of the most polluted water resources in China.<sup>212</sup>

#### **a) Government support and strong policy backing**

China's government plays a major role in the management of its water resources as is typical in a centralized system; the government therefore launched a vigorous policy and prioritized the restoration of Lake Dianchi along with two other lakes and three rivers through Three Lakes and Three Rivers Program.<sup>213</sup> In China, water pollution prevention is among the top priorities of the national government as is evidenced by among other factors, the heavy allocation of financial resources (discussed in point (b) below).

The government, through the State Council has launched successful policies and action plans which have played a major role in the practical enforcement of pollution prevention. The key features of water pollution prevention policies in China are; the coordination and involvement of all stakeholders in the formulation and enforcement of policies and the consistent updating of action plans within every 3 to 5 years of its inception.<sup>214</sup> China has had 5 Action Plans for that deal with water pollution between 1997 and 2017; the most recent was the Water Pollution Prevention and Control Action Plan issued on 16<sup>th</sup> April 2015 to be implemented within 5 years up to 2020.<sup>215</sup>

#### **b) Financial priority and planning**

An important feature of China's institutional strategies in dealing with water pollution is the allocation of financial resources to deal with water conservation. Drawing from the example of Lake Dianchi, the government of China invested 2.53 billion Yuan (approximately 39 billion Kenyan shillings) for the 2010 Program of Water Pollution Prevention in Dianchi Lake Basin; China's government has continued to dedicate financial resources to water pollution control with an estimated budget of 26.45 billion yuan for water pollution prevention in 2015.<sup>216</sup> Despite the differences in scale and extent of pollution in Nairobi River and Lake Dianchi, the success in management of any water resources, especially reversing of pollution, requires financial planning and pooling of resource through prioritization in the national

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<sup>212</sup> <http://chinawaterrisk.org/regulations/regulatory-institutions/> on 12<sup>th</sup> January 2017.

<sup>213</sup> Global Water Partnership, *China's Water Resource Management Challenge; Three Red Lines*, 2015, 23.

<sup>214</sup> <http://chinawaterrisk.org/notices/new-water-ten-plan-to-safeguard-chinas-waters/> on 13<sup>th</sup> January 2017.

<sup>215</sup> State Council of China, *Notice of the State Council on the printing and distributing the Action plan of Water Pollution Prevention and Control*, 7<sup>th</sup> April 2015, 1.

<sup>216</sup> Unknown, 'China's increasing investment in environmental protection' China Daily, 13<sup>th</sup> August 2015-  
[http://europe.chinadaily.com.cn/business/2015-08/13/content\\_21589192.htm](http://europe.chinadaily.com.cn/business/2015-08/13/content_21589192.htm) on 12<sup>th</sup> January 2017.

budget and other channel. Financial planning is particularly important in the context of Nairobi River as one of the major challenges discussed (section 3.3) is lack of adequate finances; the Nairobi River Basin Rehabilitation Program was also crippled by among other factors, lack of funds for the effective running of the program.<sup>217</sup>

#### **4.2. United Kingdom, River Thames**

The restoration of River Thames in the UK is an example of the most successful restoration programs of water resources globally; the River has enormously improved from once being declared dead by the Natural History Museum in 1957 to being a home to almost 125 fish species and 400 other species.<sup>218</sup> The following discussion will therefore look at some features of the institutional mechanisms created to achieve successful restoration.

United Kingdom (Wales and Britain) like Kenya underwent almost similar institutional evolution; In 1963 Water Resources Act was enacted and established a centralized system in the water sector where water supply, water conservation and pollution prevention was under the mandate of the Water Resources Board.<sup>219</sup> The system was found ineffective as the authority was unable to execute all the different mandates it was charged with leading to the enactment of 1974 Water Act which embodied separate regime for water supply and water resource management and more decentralization;<sup>220</sup> similar to the current Kenyan regime. The current regime has maintained separation of the above factors and further adopted an integrated water management system.<sup>221</sup>

##### **a) Stakeholder participation**

The Water Resource Management in restoring and maintaining River Thames and other water resources in the UK has largely been successful due to the incorporation of relevant stakeholders in the effort against water pollution.<sup>222</sup> Currently the River Thames Restoration Trust (TRRT), comprised of Thames 21, The Wandle Trust, and Thames Estuary Partnership, is a charity group dedicated to preventing water pollution. <sup>223</sup> TRRT has been

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<sup>217</sup> Ministry of Environment and Mineral Resources, *Nairobi River Basin Rehabilitation Program Action Report*, 2010, 5.

<sup>218</sup> <http://www.telegraph.co.uk/news/earth/wildlife/8059970/The-clean-up-of-the-River-Thames.html> on 14th January 2017.

<sup>219</sup> Sewell D and Barr L, 'Evolution in the British institutional framework for water management' 17(1) *Natural Resources Journal*, 1980, 396.

<sup>220</sup> Sewell D and Barr L, 'Evolution in the British institutional framework for water management' 401.

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<sup>222</sup> International Conference on Freshwater, *Protecting Water Resources: pollution prevention*, 2001, 22.

<sup>223</sup> [http://www.riverstrust.org/riverstrusts/thames\\_restoration.html](http://www.riverstrust.org/riverstrusts/thames_restoration.html) on 13th January 2017.

successful in promoting and campaigning for clean-up and restoration programmes, educating the public through workshops, participation in the planning of Thames Water Resource Plan and involving the public through volunteer programs.<sup>224</sup> Additionally Public participation and community commitment was a useful strategy employed by the Environment Agency in maintaining River Thames.<sup>225</sup>

#### **b) Other factors**

Other factors such as existence of a precise and coordinated water resource policy in guiding water institutions and providing for water coordination also explains the success of River Thames restoration; the leading policy documents include the Thames river Basin Management Plan, the London Rivers Action Plan and Thames River Resource Plan all of which contain detailed procedures and plans on effort towards pollution prevention.<sup>226</sup>

#### **4.3. Lessons Learnt**

The enforcement mechanisms applied by both China and United Kingdom provide a lessons relevant to the Kenyan scenario.

The case studies reveal that water pollution problem is not novel and consistent and effective means of preventing and reversing water pollution exists. Key among the measures in restoring water pollution is the need for coordination and participation of all relevant stakeholders towards pollution prevention; this is a common theme in both China's and UK's case. Other lessons will be discussed in chapter 5 (sec 5.2 on recommendations).

#### **4.4. Conclusion**

The case study highlights major strategies used by other jurisdictions in eliminating water pollution. The case of China presents the case of government support and financial prioritization as necessary components in eliminating water pollution. The UK on the other represents a very similar institutional structure to the Kenyan system combined with multi-stakeholder coordination and public participation.

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<sup>224</sup> [http://www.riverstrust.org/riverstrusts/thames\\_restoration.html](http://www.riverstrust.org/riverstrusts/thames_restoration.html) on 13th January 2017

<sup>225</sup> Canadian Heritage Rivers System, *Thames Strategy; Managing Thames a Canadian Heritage River*, 2000, 11.

<sup>226</sup> Thames River Trust, *Thames River; Sustainable urban river management through IRBM approach*, August 2010, 39.

## **CHAPTER 5: CONCLUSION**

The present chapter will outline the findings, recommendations and conclusions of the study. The study was done with the aim of establishing whether the current institutional framework is sufficient in dealing with water pollution in Nairobi River.

### **5.1. Findings**

#### **a) Institutional frameworks governing water pollution for Nairobi River**

Chapter one introduces the problem of water pollution and mentions the main institutions that govern water resources in general. Chapter two and three build on chapter one by looking at the relevant historical background for institutions charged with water management resources and role that the different institutions play in water pollution prevention. The study finds that there are different institutions that play a role in pollution prevention in the case of Nairobi River and their roles are discussed.

#### **b) Adequacy of current institutional bodies in preventing pollution**

The study in chapter three highlights the challenges in current institutional regime leading to the ineffective water pollution control regime. The link is drawn between the pollution problem faced by Nairobi River and the challenges facing institutional frameworks by detailing the manner in which the challenges discussed hinder capability of institutions.

#### **c) Water conservation and pollution prevention in other jurisdictions**

The study finds that water conservation and pollution prevention of water resources in other jurisdictions have faced great challenges as is the case in Nairobi River and further that proper implementation of certain mechanisms results in successful restoration.

### **5.2. Recommendations**

#### **a) Coordination of all relevant stakeholders**

The discussion on institutions charged with the function of regulating pollution in Nairobi River Basin highlighted the challenge of poor coordination. It is recommended that the lead agencies adopt policies and measures that ensure all relevant stakeholders participate in the efforts towards pollution prevention. Coordination may be ensured through the existence of legal and policy frameworks that elaborate the relationship between lead agencies and all other players. Additionally coordination implies the inclusion of all relevant parties in

planning, formulation and enforcement of particular strategies towards the controlling of water pollution.

#### **b) Government support and prioritisation**

Based on the comparative study it is clear that the national government must play a crucial role in the recognition and fostering of water pollution problem. Kenya must therefore recognise the urgency of the water pollution problem in Nairobi River and prioritise it in the list of projects to be dealt with; such prioritisation may be through inclusion in party manifestos of ruling parties and the inclusion in the budget.

#### **c) Financial Planning**

Financial resource plays a major role in providing viable solutions for institutions in dealing with water pollution. It is therefore important that governments and all financial institutions invest and come up with rigorous ways of raising finances and pooling resources for the purpose of water pollution control and water conservation in preparation for restoration projects. The new Water Act provides the first positive step by establishing Water Sector Fund to be applied for both water conservation and supply efforts. This is different from the previous regime which only established a water supply fund in exclusion of water resource fund.

#### **d) Capacity building of technical and research mechanisms**

The nature of environment conservation is that it requires scientific and technical expertise for successful monitoring and quality standards enforcement. It is therefore recommended that Kenya focusses on building capacity through imparting knowledge and education on water resource conservation at a local and national level. It is also recommended that Kenya finds a way to incorporate technical support into the main agencies by having departments dedicated to research as opposed to seeking parallel collaboration from foreign research institutions which has been the norm in Kenya (discussed in 3.3).

### **5.3. Conclusions**

The study has achieved its objective and responded to the statement of problem. The objectives of the study were;

- I) Analyse the nature of, mandate of, and interrelation between current institutional mechanisms governing Nairobi River.
- II) Discuss the challenges faced by the current institutions in regulating water pollution in Nairobi River and the effect on adequacy in regulating pollutions

III) Provide an ideal for water resource management institutions based on other successful jurisdictions.

#### **Objective I**

The study has analyzed the different institutions that play a vital role in pollution control in the case of Nairobi River and the relationship and interaction of such institutions in carrying out their mandate. Chapter 2 provides historical development of the institutional framework leading up to the current structure.

#### **Objective II**

Chapter three details the challenges faced by institutions in dealing with pollution which are linked to the inefficiency of the institutions in regulating water pollution in Nairobi River.

#### **Objective III**

A study of China and the UK's institutional mechanisms is analyzed in chapter four with specific focus on water resources that once faced a similar fate as Nairobi River did, with the aim of providing recommendations for Kenya's framework.

#### **Statement of the problem and Hypothesis**

The study has analyzed the problem posed in statement of problem and further proved the hypothesis that there is a direct link between the prevalence of water pollution in Nairobi River and the mechanisms applied by, and structure of institutions created to deal with pollution prevention and control.

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