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Thesis

Title: Influence of institutional arrangements on stakeholder's participation for effective urban river management. **Lower Rupingazi river basin system, Tana Catchment, Embu Kenya**

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Influence of institutional arrangements on stakeholders participation for effective urban river management. Lower Rupingazi river basin system, Tana Catchment, Embu Kenya

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Summary

Water is vital and a key element of any sustainable growth. However availability is constantly threatened due to increased demand arising from population growth, urbanization and climatic changes among others. Kenya is not an exception to this. Although a fast growing agricultural economy at a rate of 5.5%, the country has been labelled a water scarce country. Therefore water sector reforms introduced the need for stakeholder's participation under the Water Act 2002. In this light the legal framework supported participation of multiple actors; stakeholders including government, non-governmental organizations and community to help in management of the dwindling resources.

Through decentralization, hydrological basins and sub basins were established to get closer to the people in management of water resources. One mechanism sought for engagement was through establishment of Water Resources Users Associations (WRUAs) along the delineated sub catchments as platform for engagement with multiple actors. One such WRUA that was established is lower Rupingazi. It manages one of the sub basins with urban and rural characteristics covering the current Embu town, headquarter of Embu County.

Based on reviewed literature that emphasized that institutionalization encourages participation, the researcher sought to carry out an explanatory research. The aim was to explain the influence of institutional arrangement on participation of stakeholders in Lower Rupingazi WRUA, Embu Kenya.

The researcher employed a qualitative type of research design and carried out a case study. Using semi structured questions, the researcher conducted interviews to gain an in-depth understanding on the subject of institutional arrangement and participation. The data collected from the interviews was triangulated through the secondary data including the legislations, government reports and plans. Using atlas ti the outputs generated were used to analyze data to establish the institutional arrangement that affect the stakeholder's participation in this sub catchment.

The major findings were that there are various legislations that are related to water resource management. However there are duplications that lead to conflicts and at times impacted on the implementation of the activities on the ground. Equally there were overlapping mandates and unclear roles of some of the stakeholders depicted in the legislations. Further a gap in coordination mechanisms and weak enforcement of the legislations was noted.

Also it was noted that although the legal framework support provision of financing for water resources management activities through the WRUA, it was inadequate and inconsistent. Equally, participation of the stakeholders was high whenever there were activities to be done. This was mostly when funds were available to implement the activities.

The issue of enforcement came out strongly as the element of the institutional arrangement that was lacking watering down the intended goodwill of the legislations. The current legislations however are undergoing review to align to the Constitution of Kenya (COK) 2010. Therefore an opportunity exists to correct the anomalies given the two levels of government to avoid further complexity in duplication of activities and overlapping roles. Further enable clear coordination mechanisms to enhance participation of various actors.

Keywords

Institutional arrangement, stakeholder's participation, Lower Rupingazi river system, Water Resource Users Association

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Abbreviations

CAAC	Catchment Area Advisory Committee
CDF	Constituency Development Fund
CFA	Catchment Forest Association
COK	Constitution of Kenya
CDTF	Constituency Development Trust Fund
EIA	Environmental Impact Assessment
EMCA	Environmental Management Coordination Act
IHS	Institute for Housing and Urban Development
IWRM	Integrated Water Resources Management
IRBM	Integrated River Basin Approach
IWM	Interactive Water Management
KWS	Kenya Wildlife Service
MKEPP	Mount Kenya East Pilot Project
MOA	Ministry of Agriculture
MoU	Memorandum of Understanding
NGOs	Non-Governmental organizations
NEMA	National Environment Management Authority
NRMP	Natural Resources Management Project
PA	Provincial Administration
SCMP	Sub Catchment Management Plan
RBO	River Basin Organizations
RBM	River Basin Management
SHG	Self Help Group
RGS	River Gauge Station
UTaNRMP	Upper Tana Natural Resources Management Project
WRMA	Water Resources Management Authority
WRM	Water Resources Management
WRUA	Water Resources Users Association
WDC	WRUA Development Cycle
WSTF	Water Services Trust Fund

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Chapter 1: Introduction

1.1 Background

Water is the backbone of any sustainable development. Considering the critical nature of water cutting across many sectors, interdependencies occur that call for actors to participate in the decision making process over water management. Besides water availability across the globe is constantly under pressure due to increased demand arising from population growth, urbanization and climatic changes (Connor and Miletto, 2015).

Further infrastructure provision enhances service delivery hence growth in economy. Ranging from energy sector, waste water treatment, water supply, transport, and solid waste management sectors, all have a linkage to water availability in quality and quantity. The interdependencies leads to governance complexities due to limited emphasis on their cross sectorial interdependencies owing to sector specific operation (ITRC, 2012).

Kenya is a fast growing economy with a growth rate of 5.5 % per year. Like any other country, it faces urbanization with a population growth rate estimated to be 3 % in the city and urban centres resulting from populations moving in search of employment and other opportunities such as basic services (Devolution and Planning, 2013). Agriculture is the backbone of Kenyan economy providing jobs 30% and 60% formal and informal jobs respectively. This has led to undue pressure on the available water resources all over the country due to competition among different uses and users. This necessitates water governance to manage demand (Connor and Miletto, 2015).

Integrated Water Resources Management (IWRM) concept is promoted worldwide and usually advocates for coordination of water sectors ensuring stakeholder's participation, transparency and cost effective in local water management (GWP, 2013). This concept has been in use in Kenya since the enactment of water Act 2002, following the policy paper of 1999. The policy shift led to separation of functions between Water Service Provision (WSP) and Water Resources Management (WRM). The roles and responsibilities assigned to each sector and decentralization of the functions to the local level were meant to improve efficiency in service delivery (Water resources Management Authority, 2013).

Moreover the Water Resources Management Authority (WRMA) became the body mandated by Water Act 2002 to lead in water resources management. Although the coordination is meant to be done at the policy formulation level within the Ministry of water and irrigation, fragmentation of the institution with different water roles among agencies across government has led to conflicts in administration of law (Water resources Management Authority, 2013).

Notably, Kenya is labelled a water scarce country with only 647m3 per capita of fresh water which is below the recommended threshold of 1000M3 varying in time and space. WRMA experience challenges in allocation of water resources and implementation of Integrated Water Resources Management (IWRM). This is more so because stakeholder's participation is a key aspect used in making decisions over the management of the river systems and involves diverse interest of multiple actors (Water resources Management Authority, 2013).

Using the river basin approach, WRMA decentralized functions into six (6) drainage basins run by Regional offices and twenty six (26) sub basins run by Sub Region offices to be able to effectively manage the resources. Also Water Resource Users Associations (WRUAs) are established at the local level for co-operative management of water resources and conflict resolution. Further, WRUAs play a critical role to provide a platform for actors both state and non-state to participate in the decision making within a river system. The activities performed by the WRUA are geared towards ensuring water quality and quantity for the ecosystem

functioning. Various sectors; Agriculture, land, water, environment, Forestry, water users, Non-Governmental Organizations (NGOs) are stakeholders because they affect or are affected by the activities of a river system. According to van Ast (2000), "All elements that play a role in water management are interrelated and are part of a system". Therefore this calls for participation of all actors to ensure functioning of the river system. However there are enabling factors that either propel or impede stakeholders to participate in water management at local level. Therefore Coordination both vertical and horizontal levels of governance in implementation of the Integrated Water Resource Management (IWRM) cannot be overemphasized.

Lower Rupingazi sub catchment is one of the many delineated sub catchments of Tana catchment area to be managed under the framework of stakeholder's participation through Water Resources Users Association. It covers approximately 123KM2 including the Embu city. As an overview, Tana catchment is one of six major catchment areas in Kenya with 80% of its area being arid and semi-arid with per capita of 849 m3 less than the global benchmark of 1000m3(without considering the flood flow). It straddles across fifteen (15) counties. The issues faced are more on over reliance on surface water in the upper catchment and lack of exploitation of ground water in the lower reaches of the catchment. Additionally water demand as a result of increased urbanization and industrialization is a threat (Water resources Management Authority, 2013).

Embu city therefore, is the capital of Embu County (Kenya Government, 2010). Most of counties in Kenya have both urban and rural characteristics and only 5 Counties in the country claim over 50% urban areas. In this light Embu County is 20% urban, with three major towns namely Embu, Runyenjes and Siakago. Embu town city has a population of 60,673 translating to 12 % of the total county population and with a poverty rate of 42% slightly below the Kenya average of 47.2 %. Despite this, over 30 % of the population have no access to portable water and depend directly on the untreated water sources for domestic purposes (Commission of Revenue Allocation, 2011). While the county is endowed with four major rivers namely Rupingazi, Thuci, Ena and Kii, Rupingazi system is the source of the water supply for the city and its environs and interestingly the recipient of treated sewerage and waste water. Lower Rupingazi sub catchment is majorly polluted upstream from the agricultural farming. In addition the town lacks proper storm water drainage system further polluting the river which is a source of water for downstream users.

The lower Rupingazi is falls under 4DC sub drainage area in Thiba, Tana catchment area. The population is estimated to be 60,000 people within the hydrological boundary and the water resource is classified as Ecological, livelihood and Commercial (ECL). This is due to due to the fact that a small part of the sub catchment is within the protected forest area, and the other are is urban and rural settlement with small scale and industrial farming and trade. On the overall the catchment is termed as '*Alert'* due to declining surface water quality and quantity is referred towards scarcity especially during dry spell when conflicts arise therefore requiring constant monitoring.

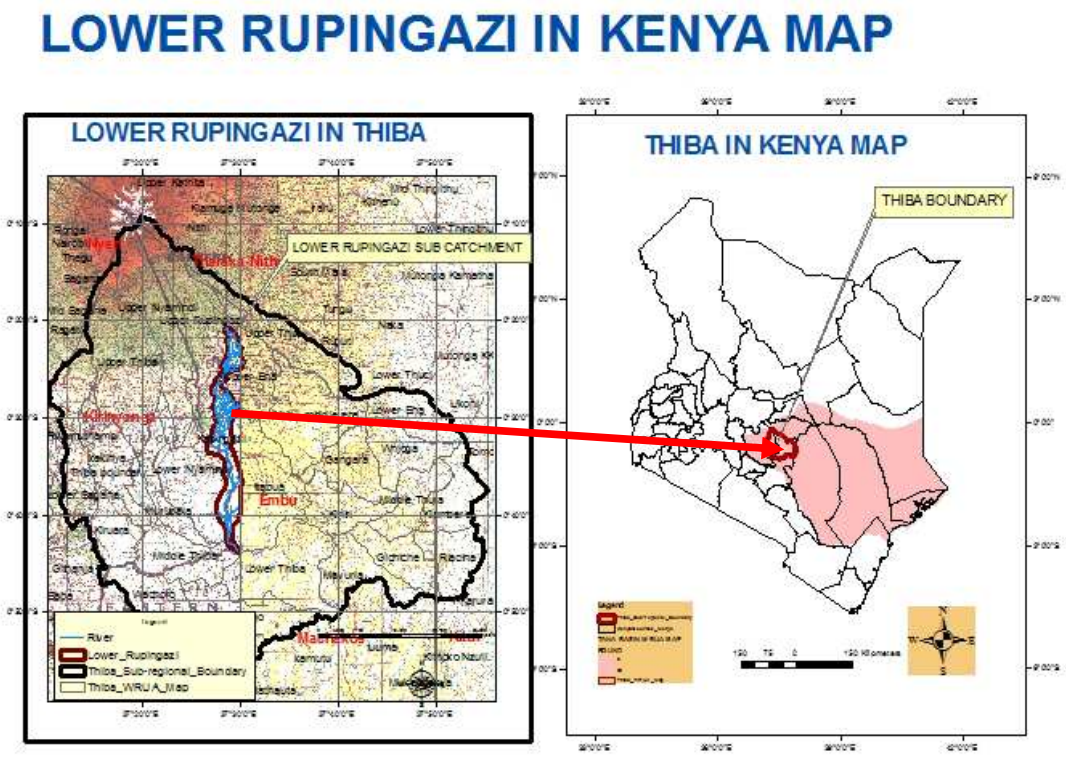


Figure 1: Lower Rupingazi sub catchment

Source: WRMA 2015

1.2 Problem Statement

Lower Rupingazi river system is managed by lower Rupingazi WRUA through collaborative arrangements with Water Resources Management Authority (WRMA). This is the oldest WRUA in Tana catchment and manages a very crucial sub catchment that is the source of water for current Embu city and the environs. Despite being in operation since the enactment of the water Act 2002, the Sub catchment faces many challenges such as catchment degradation, pollution, illegal abstractions and conflicts especially during the low spell.

According to Agwata (2005), Rupingazi River is the source of water for domestic use in Embu town, commercial, irrigation and energy production and contributes downstream to Tana River which is a home to hydropower stations that produce 70% of electricity for the whole country. Therefore the river system is vital towards sustainable development. However, degradation of the catchment led to siltation of the river in the past forcing municipal (water and Sanitation Company) to relocate intake from Kapingazi (one of the tributary) to upstream of the Rupingazi river system. This primarily was due to limited carrying capacity of the river and hence could not meet their expected water requirements. Also the intake was old such that it proved equally expensive to treat the polluted water.

To solve these issues, the WRUA implemented some activities in their plan that was developed in collaboration with different stakeholders. This Plan is commonly referred to as a ‘shopping basket’ because it is meant to be a basis for implementation through collaboration

of different stakeholders and development actors through technical support and or provision of resources.

Further, the government through Water Act 2002 provided a mechanism to finance Sub Catchment Management Plans (SCMPs) for the river basins that are managed by the Water Resource Users Associations (WRUAs) through WRUA Development Cycle (WSTF, 2009). However, for Lower Rupingazi despite the mechanisms and many actors involved in the sub catchment and the challenges are still enormous.

Reviewed literature emphasized on the issue of governance. Hooper (2005) argues that effective governance is one of the key issues confronting most countries River Basins Organizations (RBO) alongside capacity and financing terming the issue to be governance crisis rather than water crisis. Although some best practices are drawn for the river basin approaches, selective solution application according to the situation at hand is necessary. Similarly, Wang'ombe (2013) noted capacity to manage conflicts; a core function of the WRUA depended on the culture, capacity building, and leadership.

To effectively ensure the management of the river systems the participation of public and stakeholders is necessary. Since rivers are operated as the “commons”, strong institutional arrangements become necessary to ensure effective River Basin Management (Hooper, 2005a). Moreover, in another study regulation was indicated as one of the factors influencing performance of WRUAs (Musyimi, 2014).

On the other hand, integrated water management calls for interactive water management involving the public and stakeholder’s participation (Van Ast, 2000). Given that there are different actors along the lower Rupingazi system who are supposed to integrate in a bid to manage the catchment, there is need to understand the institutional arrangement and how it supports participation of stakeholders towards this catchment management. Further review indicate that, the need for cooperation and partnerships between governments and civil society, NGOs and other associations as an ingredient to efficient water governance, However coordination is crucial given that it is a challenge based on overlaps of mandate in the legal frameworks (GWP, 2000).

Jaspers (2003) argues that institutional arrangements create a platform for stakeholder’s involvement in decision making. Similarly, Franzen et al (2014) argues that institutional arrangements as drivers of environmental change, shaping social or human behaviour as well as the outcome of natural resource management. Therefore in view of the above, there is need to understand institutional arrangements in the arena of many actors with many functions towards the management of the common water resource a key concept of Integrated Water Resource Management. In addition, the impact on participation of different actors in the management this sub basin and how well they are coordinated in implementation of IWRM.

Moreover with the current emergence of the two tier government that have mandate of catchment management at the local level, it is necessary to find out the implication of institutional arrangements on stakeholders participation in relation to local water resource management along the river basin systems in this case Lower Rupingazi.

1.3 Research Objective

The main objective is to explain the influence of institutional arrangement on participation of the stakeholders in Lower Rupingazi WRUA, Embu Kenya.

1.4 Research questions

To achieve the above mentioned objective, one main question and four sub questions guides this research.

The main research question is '*to what extent does the institutional arrangement influence the stakeholder's participation in the lower Rupingazi WRUA river basin management?*

To answer the main research question, the sub questions are;

1. What is understood by institutional arrangements and stakeholder's participation?
2. What are the current institutional arrangements in lower Rupingazi WRUA in river basin management?
3. Which stakeholders are involved in lower Rupingazi WRUA river basin management and what are their functions?
4. What current institutional arrangements affect stakeholder's participation in lower Rupingazi WRUA in river basin management?

1.5 Significance of the Study

The study will inform different actors, the effects of their actions in functioning of the river systems which is very vital for driving the economy. The results will contribute to the improvement to planning and implementation decisions that are inclusive. The institutional analysis will help in finding mechanisms for strengthening the institutional relationship and trust for sustainable management of the river systems. Additionally the findings will inform the government in improving strategies towards enhancing participation of different stakeholders. On the overall the study will contribute to the knowledge on integrated water resource management more so the river basin management.

1.6 Scope and Limitations

1.6.1 Scope

The scope of the research was only limited to studying the aspects of institutional arrangement that affect participation of stakeholders within Lower Rupingazi river basin system or sub catchment managed by Water Resource Users Association (WRUA). This is selected for the purpose of this study due to urban characteristics and a major source of domestic water for the capital of Embu County. Also the WRUA is one of the oldest associations in Tana Catchment that was formed out of community own initiative of seeking solutions to their water shortages problems.

1.6.2 Limitations

The study focuses on participation only in the sense of water resource management. Participation is wide as a topic but the research choose to focus on stakeholders participation given the fact that the focus was on institutionalized participation. The study encountered limitation of time and availability of the government documents

Chapter 2: Literature Review / Theory

This section provides the theoretical perspective of the research objective. It contains, the concepts and theories related to water resource management, and discusses institutional arrangements and stakeholder's participation as the two key main variables of this research. Finally the chapter concludes with a conceptual model for this research.

2.1 Integrated water resource management (IWRM).

Agenda 21 recommendations of the earth summit in Rio de Janeiro in June 1992 and the water conference on water and the environment are basis of Integrated Water Resource Management (IWRM) concept. The concept is underpinned on four Dublin principles namely; treating water as a vulnerable and finite source, involvement of women as central players in water management, treating water as an economic resource and stakeholder's involvement in water development and management (Bandaragoda, 2000, GWP, 2000). However reviewed literature indicates the concept may have been in practice since the 1950s (Biswas, 2008, Hooper, 2005b).

Further, IWRM is defined as a process that involves coordination of both management and development of water, land and other resources with the aim of achieving social and economic welfare equitably. This is without compromising the needs of future generations and ecosystems (GWP, 2013, GWP, 2000). Similarly, Jaspers (2003) defines IWRM as management of both surface and sub-surface qualitatively, quantitatively and environmentally from participatory and multi-disciplinary dimension. The emphasis is on the societal needs and future sustainability (cf. van Hofwegen & Jaspers, 1999) as cited by (Jaspers, 2003). Notably collaboration between government stakeholders, nongovernmental organizations, private sector and general public to achieve shared goals and objectives in management of natural resources (Hooper, 2006). Coordination and sustainability aspects in this case are equally paramount.

The management of water within the water sector is occupied by complexity and interconnectivity with other sectors therefore, it is futile to imagine one sector can handle it. Consequently the multi sectorial approach is emphasized as opposed to single sector or traditional approach water management (Jaspers, 2003, Biswas, 2008). Moreover Water crisis solutions lies on the changes in governance and management approaches (GWP, 2000).

Equally, IWRM is noted to be a process that aims to achieve efficiency, equity and environmental sustainability (GWP, 2013, GWP, 2000). Although implementation of IWRM has no universal blue print (GWP, 2000), reviewed studies recognize the framework of three elements of an effective water resources management being; enabling environment, institutional roles and functions and management instruments (GWP, 2013, GWP, 2000). While admitting that IWRM faces challenges relating to interpretations, conflicts and financial in dealing with the commonly managed resources it is also applauded for it brings about different actors with stakes in a system therefore creating a mechanism for the top and bottom users meetings. This can result to coordinated strategies that are interconnected given diversified goals (Hooper, 2005b).

According to GWP (2000) success of the IWRM requires patience, broad support from political class and stakeholders. The context base of IWRM differs affecting the visibility of results on the ground thus identification and picking of low lying fruits for ground results is critical. On the other hand saravanan et al. (2009) observes IWRM is keen on multiple stakeholders and authentic participation. Therefore, Integration calls for realignment of sectorial organizations along hydrological boundaries necessitating shifts in policies for

environmental protection. On the other side Biswas (2008) argues that the complexity nature of the water sector, coupled with conflicts of inter and intra ministerial, unclear legal systems, insufficient data and operationalization's can hinder successful implementation of IWRM. Also institutional arrangements as prerequisite for water resource management is needed given that implementation cannot occur in a vacuum (GWP, 2000, Saravanan, MacDonald, et al., 2009, Hooper, 2005b). Further the concept of IRBM is analysed.

2.1.1 Integrated River Basin Management (IRBM)

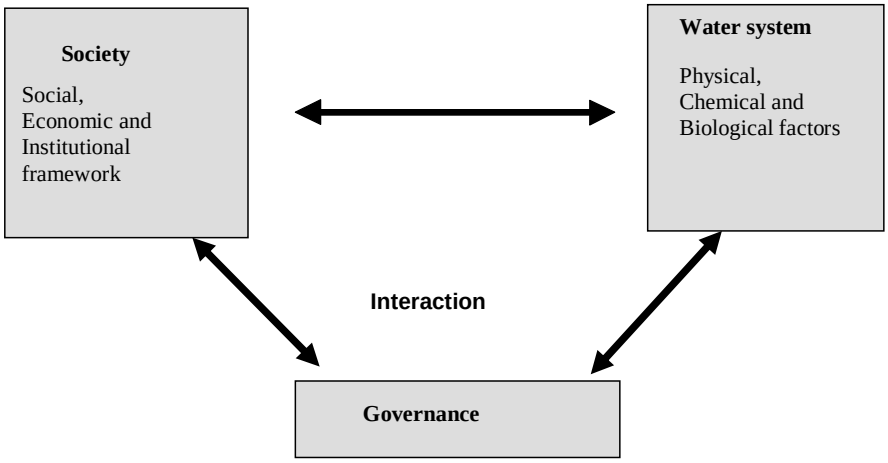
Integrated river Basin Management (IRBM) is a sub set of IWRM that calls for catchment management as opposed to single sector approaches in management of the water resources (GWP, 2000). According to Jaspers (2003), the term is understood to mean the management of all the surface and sub-surface water within a river basin to ensure quantity and quality while ensuring environmental integrity. Moreover it entails a participatory approach that integrates social, economic and environmental elements. He further notes water management was organized along hydrological boundaries due to serious competitions over water use that since the ancient times (Jaspers, 2003).

Currently water can only be managed through the hydrological boundaries given the scenario at the river basin level has many competing users and uses, hence need for cooperation between the upstream –downstream users (Jaspers, 2003). The planning of the basin must be done with stakeholders for decision making, or else it will be rendered ineffective (Jaspers, 2003). This is supported by Hooper (2005b) who further notes that the quality of IRBM can be enhanced through Stakeholder and public participation. Jaspers (2003), Mostert (2000) also recognizes the river basin being important or basis of management of water resources citing that the open systems perform various functions towards sustainable development such as water supply for domestic, fishing, industries, recreation, irrigation among others. Since IRBM takes place within hydrological boundaries, the interaction cannot be avoided as discussed next.

2.1.2 Interactive water management

Reviewed literature shows that water manager interacts with society or water users and water system itself. This enables managers to react to changes in the water system caused by human behaviour and seizing opportunities for further policy approaches. Similarly the society too interacts with the water system for ecosystem benefits. Therefore the interaction with the society calls for dialogue, participation of different actors (Van Ast, Rosa, et al., 2005).

Figure 2: Interactive Water Management



Source: (Van Ast, Rosa, et al., 2005)

As earlier discussed, IWRM does not take place in a vacuum but institutional arrangements are necessary. Therefore the topic is reviewed next.

2.2 Institutional arrangements & Governance

2.2.1. Institutions

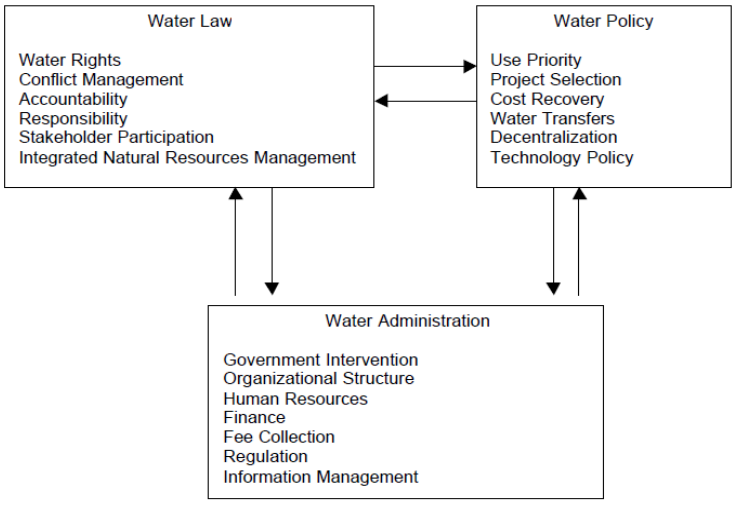
Institutions are defined as organizations or establishments created or founded to meet specified purposes for a specific purpose and is based on a set of rules entrenched in law, customs or relationships with the society (Jaspers, 2003). Institutions are both formal and informal. They shape the behaviour and roles of individuals and groups within human interaction context meant to achieve certain objectives. Further, written rules, laws, procedures, informal rules norms, practices, patterns of behaviour all form part of the institutional framework (Bandaragoda, 2000). They also include rules, norms or shared strategies (Franzen, Hammer, et al., 2014).

2.2.2 Institutional arrangements

According to Jaspers (2003), institutional arrangements are a prerequisite towards operationalization of the Integrated River Basin Management (IRBM). They create a platform for stakeholder's involvement in decision making. The organizational of basin and sub basins are set along the hydrological boundaries and hence a system for having an integrated river basin using measures of water pricing and recovery of costs (Jaspers, 2003). Therefore institutional arrangements can be defined as working set of rules that determine eligibility for decision making, actions to be allowed or not, procedures to be followed, information to be or not provided and the payoffs to the affected persons Ostrom, 1990 as cited by (Jaspers, 2003). Additionally Franzen et al (2014) sees institutional arrangements as drivers of environmental change, shaping social or human behaviour as well as the outcome of natural resource management.

The institutional aspects consists of three main elements namely water law, water Policies and administration by Saleh as cited by (Bandaragoda, 2000). Therefore, it is important to study institutions along the river basin owing to the fact that it is a critical aspect of IWRM. Moreover the coordination of various actors becomes necessary (Bandaragoda, 2000). Figure below is a framework for institutional arrangements.

Figure 3: Interlink ages among institutional components



Source: (Bandaragoda, 2000)

Based on his research, Bandaragoda (2000) argues that most countries have a tendency of focusing on organization development neglecting laws and policies for effective water management. Also, they follow informal rules neglecting the formal rules. Sometimes the informal and formal institution fail to coexist and contradict each other therefore enforcement becomes a challenge affecting performance. The link of existing frameworks while embedding the new policies and legal frameworks is required. A case in point is Pakistan and Sri Lanka irrigation management division and Pakistan (Bandaragoda, 2000).

Further he argues that these institutions need to be distinguished from the organizations to understand the cohesiveness and functioning of various elements because institutions shape the behaviour of individuals in a context of human interactions (Bandaragoda, 2000).He argues that relationship between institutions and organizations in water management is an important one because on one hand it is an incentive and on the other restraints individuals and groups from acting outside the required framework. A good example being water allocation is a constraint over water use while the water user association is an opportunity for the water users to participate in water management. Consequently it creates societal stability (Bandaragoda, 2000).

In one his findings, Bandaragoda (2000) registers that the rules and policies are difficult to replicate from one country to another citing the case of Sri Lanka and Philippines. He cited transferability of models for institutional arrangement a challenge owing to finances, politics, living standards, and the stability of every country (Hunt 1999 as cited (Bandaragoda, 2000). In his recommendation, lessons learnt can be used an example being that of a case in Mississippi to utilize lessons learnt from Mekong because the nature of the problem facing the two countries is similar.

Additionally, even within the same basin the institutional development differs. For example case of Victoria and New South Wales both within the Murray Darling River in Australia had different political units. Therefore implying local context has an impact on the institutional arrangement (Bandaragoda, 2000). He recommends that for effective participation can only be facilitated through information flow, creating a forum and availing resources (Bandaragoda, 2000).

Bandaragoda (2000) observes that for integration to occur institutional arrangements including rule and roles are vital. The behaviour of stakeholders must be well reflected. Consequently roles refer to well defined rights and responsibilities and must be reflected in the policies, laws and administrative structures. Moreover stakeholders need to be structured through effective organization and procedures and each must know of its own roles and responsibilities as well as that of others. Another critical part of institutional arrangements is the coordinating role of the institution as it forms the basis of integration of the institutions. This in turn serves as instruments towards stable human interaction with reduced uncertainties.

Moreover the institutional frameworks facilitate conflict resolution. It entails coordination of different uses and users of natural resources, set rules and policies organizations related to management of water resources. However he noted that legal framework (law and order) is affected by culture, practices and traditions of particular context (extraneous factors) among others (Bandaragoda, 2000).

Surprisingly, institutions per see do not influence or affect the performance rather it is the management of the people within the institutions that affect the performance of institutions. Therefore, this calls for management of the interactions within the institutions (Bandaragoda, 2000). Other factors that affect the performance within the institutional framework include:

coordination, skills, competencies, knowledge affect the performance of the institutions. Therefore the institutional framework becomes a prerequisite among other factors that affect the performance of the institutions. Given that human interaction takes place within the institutions, they are constrained and protected by a nested set of institutions.

According to Franzen, Hammer, et al., (2014) few studies link requirements of participation with the institutional changes or organizational changes needed in the local level or how the two relate with governance. However in the study carried out in Sweden consisting water councils, established four main factors to consider for institutional arrangements to include; organization of stakeholders and willingness to devote resources, willingness and awareness to include most relevant stakeholders, leadership and voluntary involvement in implementation and provision on which necessary for institutional arrangement.

On the other hand, Biswas (2008) argues that while many countries have centralized institutions, varied interests of stakeholders within the institutions hinder integration. This is largely because the decentralization of decision making at the lowest level may not translate into integration at the top ranks.

In his study, Jaspers (2003) concluded that institutional framework is nation or country based citing example of Zimbabwe, Tanzania and South Africa which had different frameworks. Hooper (2005b) notes that attributes of good governance practice in a river basin involves creation of an enabling environment, Institutional Framework, and use of Management tools. The same has been echoed by (Jaspers, 2003, GWP, 2000) in their studies. The principle of subsidiarity, dictates hydrological unit set up and organizations set up to allow for decisions at the lowest level possible (Jaspers, 2003).

Saravanan, MacDonald, et al., (2009) supports that institutional arrangements play a key role in creating and enabling environment upon which actors play their role as opposed to just policy documents. The institutional structure allows for democratic power sharing (Saravanan, MacDonald, et al., 2009), facilitate stakeholder's coordination and is a means to empowerment (Mostert, 2000). Importantly in their studies they observed that to sustainably enable various institutional structures to integrate, water resources becomes questionable when financing is limited (Saravanan, MacDonald, et al., 2009).

2.2.3 Institutional framework of water sector in Kenya.

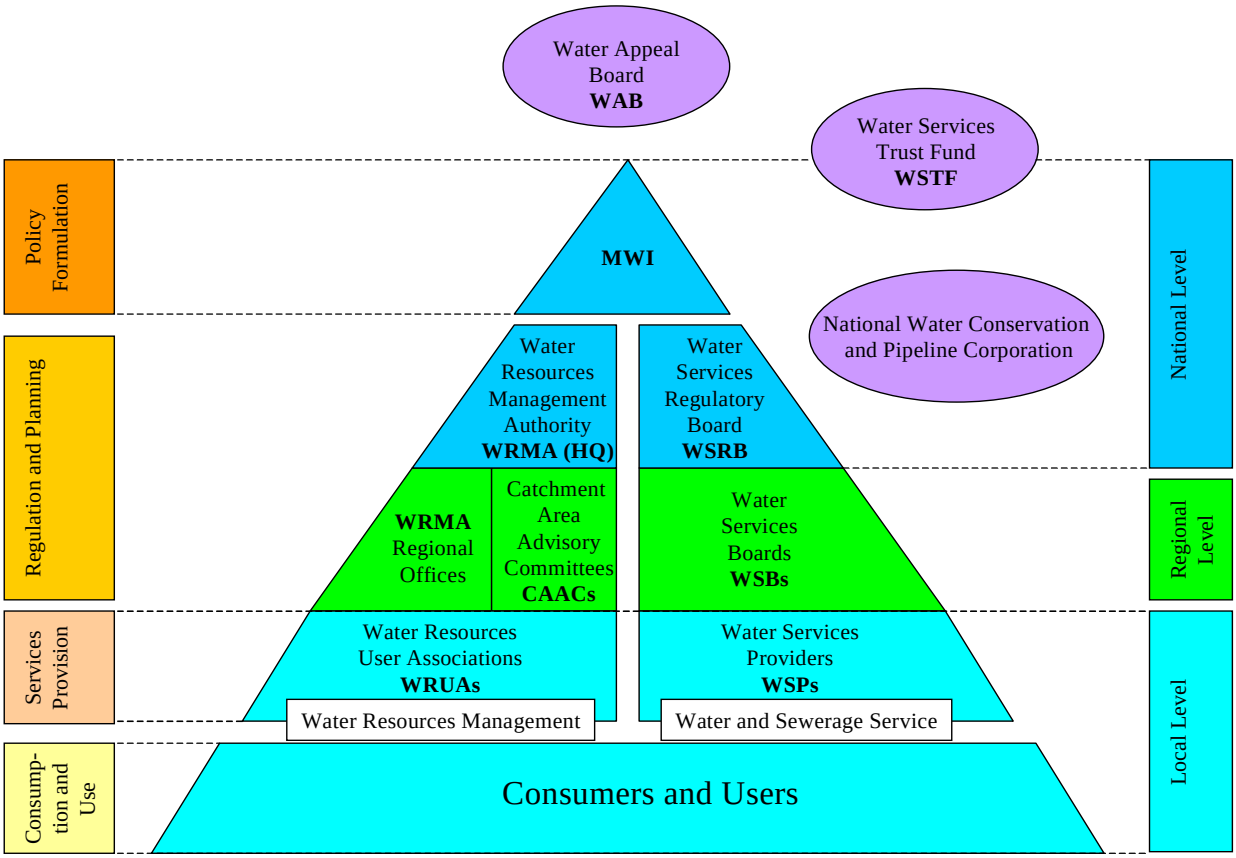
The water Act 2002 is the water law that governs the water sector in Kenya and it came into being via the policy paper 1999. The law represents a key shift from the previous law cap 372 in that it was meant to create efficiency and effectiveness in water resource management through separation of functions and assigning roles to various institutions, financing mechanism, dispute handling, and separation of policy formulation, regulation and service provision.

The institutions that came into being and their functions include; Ministry of Water and Irrigation (MWI); to formulate policy and provide oversight within sector, Water Resources Management Authority (WRMA); to plan, regulate and manage water resources), Water Services Trust Fund (WSTF); to finance water services, Catchment Area Advisory Committees (CAACs); regional body set up to advise WRMA on the management of water resources, Water Appeals Board (WAB); to hear and determine disputes, Water Services Regulatory Board (WASREB); regulation and planning of water services, Water Services Boards (WSBs); regional body responsible for regulation and planning of water services, Water Service Providers (WSPs); to provide water services under license from the WSBs, Water Resource Users Associations (WRUAs); local body set up by water users to enable communities and water users to participate in water resource management and National

Water Conservation and Pipeline Corporation (NWC&PC); development and management of state assets for bulk water all under the Ministry of water (WRMA, 2008).

The diagram is a representation of these various institutions from the national level to the local level

Figure 4: Institutional Framework under the Water Act 2002



Source: WRMA (2008)

Notably the Ministry is in charge of policy formulation both the water resources and the water services. In regard to the water resources, WRMA is national body decentralised to the region and sub region levels. At the lowest level is the WRUA, an association created as a platform for the stakeholders within a particular hydrological boundary to engage with the government for participation in water resource management. At this level we note interaction between the WRUA and the water services providers who depend on the water sources for services delivery therefore becoming part of the stakeholders at the local level.

Therefore coordination of the service and resource management is the responsibility of the Ministry at the top level. Further the regulation is at the national and a regional level while at the local level is where the actual implementation and participation through interactions with stakeholders normally take place. The framework only outlines the Water Act 2002 which is only one Ministry but in resource management other sectors come into play in resource management as stakeholders.

Therefore the issues of institutional arrangements are crucial considering other players equally have frameworks that are implementing activities at the local level (Bandaragoda, 2000).

2.2.4 Water governance

Reviewed literatures indicate that governance challenge due to economic and social systems, affects demand hence putting undue pressure on resource base calling for participatory approach, where stakeholder's involvement in management of resources is vital by all water users including the role of women (GWP, 2000). Although the governance is complex process, expected changes or outputs are expected to be incremental or gradual. Thus progress means action (GWP, 2013). Governance fails as a result of failure in market, institutional system or government itself. To address this it is advised that the policy makers analyse critically the institutional arrangements necessary not based on market instruments or on performance in other countries (GWP, 2000).

Hooper (2005b) defines Governance as "process by which resource managers at all levels and within different organizations make choices about the allocation and use of natural resources.'' Also, according to GWP (2000) governance is defined as "the framework of political, social, economic and legal structures within which societies choose and accept to manage their water-related affairs. It includes governments, the market forces that help to allocate resources, and any other mechanism that regulates human interaction." This means the political aspects for example in Eastern Europe have a link with changes in social and economic, markets and legal and institutional reforms (GWP, 2000).

Cooperation and partnerships between governments and civil society, NGOs and other associations is an ingredient to efficient water governance. Moreover, the networks links are crucial towards achieving efficient governance, which requires accountability, transparency, respect of law and participatory mechanisms (GWP, 2000). To ensure this the governance follows the law of subsidiarity, with the key objective to balance economic, social and environmental sustainability. Coordination of the water related activities is always a challenge based on the overlaps of mandate within the ministries per water regulations. A case was that of the Central and Eastern Europe (CEE) countries where the round table dialogues were missing (GWP, 2000). On the other side Hooper (2005b), posits that governance is a process where managers of resources in different organization at all levels, make choices about natural resources use and allocation. Therefore it can be seen that decisions play a big role.

According to Klijn and Koppenjan (2012), the network theory policy process focus is on interactive processes of different actors and the institutions context where the interactions take place. Further he argues that based on inter organizational theory organizations play a key role and the survival of each depends on exchange and resources of other institutions. This scenario reflects in the water management where participation of different multiple actors is encouraged.

2.3 Participation in Water management.

2.3.1 Participation overview

Participation is widely defined by many scholars. It is a process of providing opportunities to citizens or populations to take part in political and social decision making of initiatives that affect them (Glass, Furst et al 2001 as cited by (Katharina, 2013).

Furthermore, participation is used to refer to either as citizens, public or stakeholders participation. Sometimes the term public is not well defined and means different things from

consultation, information sharing or discussions (Hooper, 2005a, Arnstein, 1969, Huitema, Mostert, et al., 2009, Reed, 2008).

According to Huitema et al (2009) "Public participation refers to collaboration between governmental and non-governmental stakeholders." Emphasis lies in collaboration given the 'common pool' resource management in governance. Arguing from a normative perspective, he posits that public participation improves quality decision making through use of information and creativity within the society. Further, resulting to better understanding of the public, improving government coordination, transparency, and democracy. However he registers that participation is threatened whenever resources lack a phenomena common in water management.

Integrated River Based Management (IRBM) brings stakeholders together, that is, people with bargaining power in a river basin, in processes therefore manage activities and impacts or resource use collaboratively. Stakeholders include government entities, industries, business, community organizations and other organizations and individuals with a certain interest (Hooper, 2005b, Hooper, 2006).

Franzen et al (2014) acknowledges the importance of public and stakeholders participation in natural resource management. He posits two arguments for public and stakeholders participation to include Normative and Functional. Normative arguments deal with the democracy and human rights while the functional arguments deal with capacity building, learning and implementation of policies. Using the functional arguments, the study on water framework development implementation in Sweden was based on two river catchments, Kavlinge and ronne. The findings disclosed that in Kavlinge river catchment, success was attributed to cooperation or agreements on implementation, distinct roles and responsibilities between the consultancy and other actors and the voluntary character of participation by actors (willingness). On the contrary the lack of consensus among representatives, lack of interest among the actors and the failure of leadership to coordinate affected the implementation (Franzen, Hammer, et al., 2014) et al.

Reed (2008) notes participation has gained popularity owing to the need for transparent decision making processes and therefore this has been entrenched in most of the policies. In environmental field problems are of complex nature and affect the multiple actors hence participation in decision making is deemed necessary. Additionally, Reed (2008) posits eight aspects for reaching success in participation. They include; participation must be based on need for empowerment, learning and trust, involvement of stakeholders in the earliest stages, analysis of stakeholders, agreed upon objectives of the process, proper selection of participatory methods in line with the types of participants, skilled facilitation, and integration of local and scientific knowledge and institutionalization of the participation. However embedding stakeholders' participation or institutionalization, may call for change in organizations.

Reed (2008) sees both positive and negative effects of participation. Positively participation enables the voice of the marginalized to be heard and creates active citizens; it builds trust and enables technology advancements for sustainability. On the contrary, he states there are negative outcomes of participation as well such as fatigue from consultations, delayed decisions and negative interactions with existing laws. The management of the processes becomes necessary. In conclusion, Reed (2008) noted that studies had proven stakeholder's participation leads to effective and durable decisions although he claims the empirical data is limited to support this. This is supported by his recommendation for further research that would be necessary to apply in different social cultural and biophysical contexts.

Moreover, the literature indicates that a stakeholder refers to "a person(s) or organizations with an interest that are affected or can affect a certain decision." In this case, decisions on river basin management (Reed, 2008). He further argues that the term stakeholder is preferred in environmental context as opposed to public, because dealing with people who have an interest in a certain aspect proves easier. Moreover, stakeholders include community organizations, government entities business and industry organizations, and other organizations and individuals with a particular concern or interest. However, the marginalized in most of the countries are left out yet they have a claim to be heard thus need to be incorporated. The issue of the marginalised is further highlighted in literature on importance of integrated river Basin Management approach (IRBM) (Hooper, 2006, Hooper, 2005a).

Luyet, Schlaepfer, et al.(2012) noted that although the subject of stakeholder's participation is studied widely no distinction is made between public involvement and stakeholder's participation. Therefore he distinguishes public from stakeholder, whereas public is the unorganized or unstructured individuals and stakeholders is a group of people organized and share a common interest and stake in a particular system or issue. The importance being that stakeholders' participation is a condition to be fulfilled for effective water resources management (Jaspers, 2003, Bandaragoda, 2000). Moreover it enhances the quality of a project through social learning and offering technical solution (Luyet, Schlaepfer, et al., 2012). Following the many advantages and disadvantages of stakeholders participation enumerated by various actors, lessons learnt in one case cannot just be replicated in another context due to social, political and historical aspects or context (Luyet, Schlaepfer, et al., 2012).

Following the review of what participation is and few studies we therefore look at the theories and frameworks related to the subject.

2.3.2 Approaches and theories of participation

Broadly participation theory stems back in the 1960s and there are tremendous changes in the field especially in the 1990s. First is the theory of *ladder of participation* back in 1960s that focused on power (Arnstein, 1969). That is, Arnstein equated citizen participation to mean redistribution of the power for inclusion of everybody in political and economic processes of their government. That included information sharing, programs allocation and resources among others. The study, organized participation in eight rungs famous known as ladder of participation. There are three levels namely non-participation, Tokenism and citizen power. This depicts that the higher levels of participation are recommended and shows citizens having power, knowledge and can have control over decisions (Arnstein, 1969). Her work has been criticized for assumption that more control means more power yet the community's desire may not necessarily be that. Moreover more control without support may lead to failure. Since then the ladder of participation has been reviewed by many scholars.

For instance, the theory continuum of involvement revealed that participation levels are interconnected. The theory advocates that different 'levels' of participation are acceptable in differing context and settings, thus progression recognizes that power is not always transferred in apparently participative processes, but that the processes still have value. Unlike Arnstein model where control is what the communities want, this emphasizes on processes which consist of; Supporting individual, community initiatives, acting together, deciding together and information (Wilcox, 1994).

Additionally, due to complexities of power, contemporary modern day where communities are not enclosed in one geographical area, community participation is a partnership where they play roles. Therefore when the partnership is engaged the roles and responsibilities

become clear and transparent. The capacity building of the communities is applauded to empower people to solve their contemporary issues (Skinner, 1995). This is in agreement with Burns et al (1994) who assumed that when people are empowered they have freedom and are responsible enough to make decisions based on alternatives available (Wilson, M. and Wilde, P., 2003).

Similarly referring to the work of Wilson and Wilde (2003), community participation is measured through four dimensions that have evolved which are focused on partnership. The dimensions include, influence, communication, inclusivity and capacity. They are defined as follows;

- *Influence* – is "how the partnerships involve communities in the 'shaping' of regeneration plans/activities and in all decision making."
- *Communication* refers to "How partnerships develop effective ways of sharing information with communities and clear procedures that maximize community participation."
- *Inclusivity* refers to "How partnerships ensure all groups and interests in the community can participate, and the ways in which inequality is addressed."
- *Capacity* defined as "How partnerships provide the resources required by communities to participate and support both local people and those from partner agencies to develop their understanding, knowledge and skills." This can be seen to reflect partnerships or collaboration as is mostly used in water sector among different actors.

On the other hand, Reed (2008) identified different typologies of participation. The first is based on the degree of engagement with participation. Secondly, it is nature based in respect to direction of communication. Thirdly is participation based on theoretical basis, Normative or pragmatic and fourth is participation based on objectives which could be research based or development driven.

Moreover, Rowe and Frewer (2005) identified public engagements to consist of three elements namely public communication, public consultation and public participation. He defines participation as "the practice of involving members of the public in the agenda setting, decision-making, and policy-forming activities of organizations/institutions responsible for policy development." But he argues that involvement occurs only where there is a two way exchange of information and not one way in what he refers to as between a 'sponsor' and 'community'. In his work we see emphasis of flow of information being important element of involvement for effective public participation.

Moving to the issue of water resource management participation is described to mean involvement of community in something. In response to water management it is not a new phenomenon as is seen in case of Netherlands cooperation's in defence of territorial waters. For sustainable water management the interaction with societal actors in decision making is inevitable given the wealth of knowledge, cultural issues that are linked with the ecosystem. This makes the communities as the best candidates in water managements or water managers per see. Participation is seen as the solution to river basin approaches as it avoids potential conflicts, problems of managements and costs in the long run. Further he advocates that government can adopt many roles in the participation process and each hierarchy outlines the degree of the interaction with the societal actors (Van Ast, Rosa, et al., 2005).

This argument apparently agrees with Arnstein's ladder of participation, although modified to reflect the participant's role. The lowest level indicates no participation on the side of the

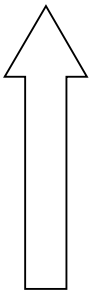
actors, while the 2nd level minimal role in participation is experienced although the target is for information or research. The third level shows the government is consultative by involving the society to provide possible solutions to undertakings by the government. The 3rd level is more of the society advising government and the fourth level is the government delegate task to the actors therefore becoming co-decision makers. The fifth is cooperative and here making policy is partnership venture. The highest rank, facilitative, shows the citizens initiating policies and the government plays a facilitative role. In his arguments Van Ast et al (2005), the interactions are meant to share exchange information and knowledge hence improve the quality of decisions. However, he sees the government being disadvantaged with open communication that can hinder implementation of its activities. More so if the actors have other interests other than that of the government. To ensure the interests of the government are met this calls for institutional framework. Secondly if implementation challenges are experienced then the participation process need to be managed (Van Ast, Rosa, et al., 2005).

It is therefore necessary to identify the type of participation considering factors like, the scale of water system, the gender, social cultural and religion, information and trust. Finding the types of involvement and hierarchies of the stakeholders is necessary as well. The higher you go on the ladder, the stronger the interaction as illustrated in figure 3(Van Ast, Rosa, et al., 2005).

Figure 5: Ladder of participation

Step	Style of Governance	Role of Participant	
6	**Facilitative**	Initiator	*Active Participation*
5	**Co-operative**	Co-operating Partner	
4	**Delegating**	Co-decision Maker	
3	**Advising**	Advisor	
2	**Consultative**	Consultant	*Passive Participation*
1	Open authoritative	'Target group' of information	
0	Closed authoritative	Obedient citizen	

Increasing interaction



Source: (Van Ast, Rosa, et al., 2005)

Another framework shows that one key aspect of successful participation is integration of all stakeholders. This is through proper identification to avoid bias due to omission or negative impacts later in the projects. It's further posited that this does not mean involving all stakeholders either due to complexity and the cost implication of the participatory process. To minimize the risks it is advised undertaking the process with heterogeneous people. This requires striking a balance between the two. Identification of stakeholder and characterization in order to understand their power relations and their interest are required (Luyet, Schlaepfer, et al., 2012). Another reviewed literature indicates different goals, aims and purposes of resources and or competing interests by stakeholders compound coordination challenges (Saravanan, MacDonald, et al., 2009).

Luyet, Schlaepfer, et al., (2012) framework, uses five degrees; information, consultation, collaboration and co-decision and empowerment as depicted in the figure below.

Figure 6: Participatory techniques with their degree of involvement

Some participatory techniques with their degree of involvement, inspired by IAP2, 2009; Tippett et al., 2007, HarmoniCOP, 2005; Richards et al., 2004; Van Asselt et al., 2001; OECD, 2001 and Rowe and Frewer, 2000.

Participation technique	Information	Consultation	Collaboration	Co-decision	Empowerment
Newsletter	X				
Reports	X				
Presentations, public hearings	X	X	X		
Internet webpage	X	X			
Interviews, questionnaires and surveys	X	X	X		
Field visit and interactions	X	X	X		
Workshop		X	X	X	X
Participatory mapping			X	X	X
Focus group			X	X	X
Citizen jury		X	X	X	X
Geospatial/ decision support system	X	X	X	X	
Cognitive map	X	X	X		
Role playing			X	X	X
Multicriteria analysis			X	X	
Scenario analysis		X	X	X	X
Consensus conference		X	X	X	X

Source: (Luyet, Schlaepfer, et al., 2012)

The degree of participation is critical because it influences decision making and the choice of participatory techniques. The choice of techniques selected depends on many factors; "1) Degree of involvement, 2) Type of stakeholders, 3) Local cultural and social norms, 4) Past events (history of development etc.), 5) Intended timing of the use of the techniques within the project, 6) Knowledge and experience of the project manager/facilitator." (Luyet, Schlaepfer, et al., 2012).

While recognizing the stakeholders and public approach participation as key elements in enhancing Integrated River Basin Management (IRBM), investment into the empowerment through education and awareness programs that target all the sectors of the society must be done. In this way, opportunities are provided for decision making (Hooper, 2006). The civil society and NGOs are recognized for complimenting governments in IWRM through voicing the poor and marginalized by strengthening capacities of communities at the local level. However the role of government to ensure the Non-Governmental Organization (NGO) and civil society are accountable must not be absconded (GWP, 2000).

Similarly the local authorities affect ecosystems through energy supplies, land uses, provision of services to its citizen, Pollution, non-point pollution, hence must be able to provide the platform for planning, information sharing and support stakeholders and policy makers. They play an important role of implementing the IWRM locally and within the boundaries (GWP, 2000). This concurs with the definition of stakeholders within the river basin (Hooper, 2005b).

The sole purpose of conducting participatory approaches is for empowerment and increased efficiency although clarity of interaction between the government and society lacks. The measures that increase the efficiency of a certain operation are acquisition of information, informing and consultation (Katharina, 2013). On the other hand community participation is crucial owing to the wealth of knowledge in the basins they possess out of having lived in the basins for long. Therefore participation leads to empowerment and this helps them own decisions in agreed frameworks of rules (Bandaragoda, 2000).

2.3.3 Participation and sustainable development

The complexity of environmental matters requires broad knowledge that allows flexible decision making thus stakeholders participation is applied nationally and globally in decision making of environmental issues (Katharina, 2013) Participation in water management considers interrelations between water quantity, quality and the human activities which affect flora and fauna and their own water availability for the different purposes Management (Katharina, 2013). Since participation allows flow of information among stakeholders, trust and respect are built that promote the collaboration and resolve conflicts (Katharina, 2013).

2.4 River Basin Organizations (RBOs)

RBOS are specialized organizations set up due to stakeholder's demands or political authorities to deal with the water resources management issues. This could be at a river, lake, or an acquirer mostly national and do not go beyond state boundaries and depend on the historical culture and social context (GWP, 2000).

Successful River basin organizations are known to be supported by; establishment of technical competences, focus on recurrent issues like flooding and droughts, practice basin wide stakeholders involvement, ability to generate revenue for sustainability through accepted solutions by all stakeholders, must have clear jurisdiction boundaries (GWP, 2013). Similarly sustainable river basin management is characterized by; participation of the public and stakeholders in decision making and local empowerment, effective demand management, agreements on commitments, and mechanisms for monitoring base and financial and human resources adequacy(GWP, 2000).

Hooper (2005b) argues that RBOs can be looked at as solution to the dilemma of the "commons property''. However he notes that the roles and functions vary worldwide. He further illustrates 9 taxonomies of RBOS namely trust, advisory, authority, commission, corporation, council, committee and federations, which are based on social and historical content. In this context this research focus is on WRUA which fits in as an association (Hooper, 2005b). In his study of Australian catchment, Hooper found that effectiveness of an RBO to function was affected by lack of coordination among other governance issues. Also, integration depended on critical issues like coordination, role specification, clarity in divesting government roles and responsibilities, financing, leadership, information sharing, regional and local planning (Hooper, 2005b).

2.4.1 Water Resource Users Association (WRUA) in water management

There is broad recognition that IWRM implementation requires decentralization of the function to be at the basin level and sub basins which is the lowest level for decision making. The concept of management of water at the river basin is old as seen in examples like the Yangtze, the Indus, the Tigris and the Euphrates River. Although the involvement varies, the perception differs about the river organizations. Others like the irrigators and farmers or hydro power see river basin organizations as places of work.

Based on the common nature of rivers, challenges such as lack of awareness and capacity affect the institutions (Hooper, 2005a). The institutions created at the sub basins level are of different types like associations, commissions, and trusts committees among others. In the Australia, case of Murray darling engages with communities for natural water management and reallocation of water resources. Also in the case of Tennessee valley authority, functions include poverty reduction, soil conservation, and flood management among others (Hooper, 2005a).

In reference to water Act 2002, WRUAs in Kenya, represent the lowest level institution at the community level where all the stakeholders; water users both consumptive (industrial, water

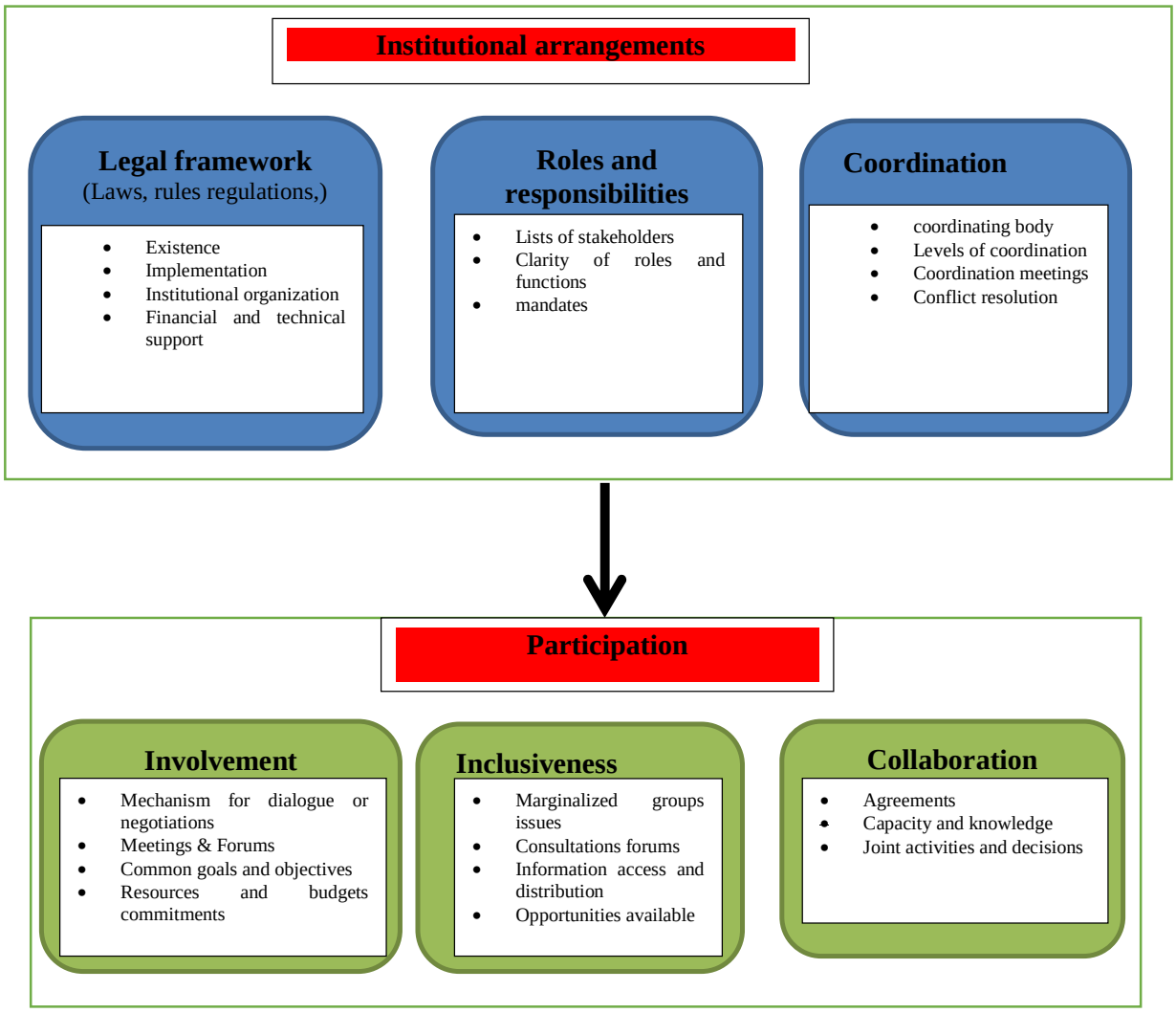
supply, domestic, agricultural) and non-consumptive users (fisheries, recreation, hydro-power and nature conservancy), the government bodies, non-governmental bodies participate in decision making. Apart from decision making, stakeholders are also involved in other roles and functions like planning, monitoring and enforcement activities (Jaspers, 2003). The WRUAs core business is to cooperate in management of water resources along the sub catchments and conflicts resolutions.

To accomplish this role, they do so through planning and implementation of their activities contained in the Sub Catchment Management Plan (SCMP) together with stakeholders. They provide a platform for participation of stakeholders. As cited by Mumma (2007), /Water Users Associations (WUAs) play a critical role in cooperating in sharing scarce water as the case of Nanyuki district in Kenya.

2.5 Conceptual framework

The conceptual framework summarises what the theoretical review highlights. Two main concepts namely institutional arrangements and participation in water resource management have been isolated from the literature to form the basis of this study. Therefore the conceptual framework show that the institutional arrangements which entail legal framework, roles and responsibilities and coordination influence participation through involvement, inclusiveness and collaboration of stakeholders.

Figure 7: Conceptual framework



Source: Author 2016

Institutional arrangement consists of rules, procedures and information (Jaspers, 2003). The institutional aspects consists of three main elements namely water law, water policies and administration. They could be formal or informal (Bandaragoda, 2000)

This research will focus on laws, rules, regulations and policies (*legal framework*) which are formal and can be verified because of their legal backing. According to the framework the organization structure or administration forms part of the institutional arrangement. Equally citing the work of Hunt 1999, Bandaragoda, (2000), the institutional arrangements must be supported financially. This will therefore be part of examining the legal framework as further supported by (Saravanan, MacDonald, et al., 2009)

Roles and responsibility of institutions are a vital characteristic of institutional arrangement. This must be clearly reflected in policies, laws as well as administration. The stakeholders must be structured and have clear roles and responsibilities and equally know the roles of others. Further the roles and responsibilities, human interaction and relationships are vital and not just policy documents (Bandaragoda, 2000, Saravanan, MacDonald, et al., 2009).

Coordination aspects are outlined as critical part of institutional arrangements to encourage integration. Coordination is highlighted to contain the mechanisms for integration between different laws rules and policies, human interactions of different organizations and actors related to water management, therefore reducing conflict (Bandaragoda, 2000, Saravanan, MacDonald, et al., 2009).

Participation on the whole is covered under the participation theories and frameworks in the literature review. However elements out of the reviewed literature that fit into the stakeholder's participation in water resource management were selected.

Involvement means taking part (Van Ast, Rosa, et al., 2005). Participation is a continuum of involvement process starting from supporting individual community initiatives, acting together, deciding together, consultation and information (Wilcox, 1994). *Inclusiveness* is a key aspect of participation and it is giving a voice to the marginalized and women in decision making (Hooper, 2005b, Reed, 2008, Arnstein, 1969). Further given the many actors in the water sectors the aspect of *collaboration* is another element of participation. It is creating partnership where the individual and communities engage by playing different roles. When partnership is established the roles become clear and transparent (Skinner, 1995). Furthermore participation focuses on collaboration, cooperation, agreements given the management of a 'common pool' resource (Huitema, Mostert, et al., 2009, Franzen, Hammer, et al., 2014).

The institutional arrangements create a plat form for participation of multi actors. They determine eligibility for decision making, actions to be allowed or not, procedures to be followed, information to be or not provided and the payoffs to the affected persons ((Jaspers, 2003). Therefore based on the selected literature the conceptual framework will seek to establish the link between the elements of institutional arrangements and those of participation.

Chapter 3: Research Design and Methods

3.1 Introduction

This chapter discusses the methodology that the researcher will undertake to carry out the study. It consists of the outline of the research strategy, the operationalized variables and indicators, the sample selection procedures and size, the data collection methods, validity and reliability and the data analysis.

3.1.1 Revised Research Question(s)

Research question

The main research question is '*to what extent does the institutional arrangement influence the stakeholder's participation in the lower Rupingazi WRUA river basin management?*

To answer the main research question, the sub questions are;

1. What is understood by institutional arrangements and stakeholder's participation?
2. What are the current institutional arrangements in lower Rupingazi WRUA in river basin management?
3. Which stakeholders are involved in lower Rupingazi WRUA river basin management and what are their functions?
4. What current institutional arrangements affect stakeholder's participation in lower Rupingazi WRUA in river basin management?

3.2 Operationalization

Table 1: Operational definitions of terms and concepts

Key Concepts	Definitions
Integrated Water Resource Management	"A process which 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." (Hooper, 2005b, GWP, 2000). "The management of surface and subsurface water in a qualitative, quantitative and environmental sense from a multi-disciplinary and participatory perspective. There is a focus on the needs and requirements of society at large with regard to water at the present and in the future, thus aiming at maximum sustainability in all senses." (Jaspers, 2003).
Institutional arrangements	Written rules, laws, procedures, informal rules, norms, practices, patterns of behaviour all form part of the institutional framework. The institutional aspects consists of three main elements namely water law, water Policies and administration by Saleh as cited by (Bandaragoda, 2000). Therefore, it is important to study institutions along the river basin owing to the fact that it is a critical aspect of IWRM. Moreover the coordination of various actors becomes necessary (Bandaragoda, 2000). "Working rules that determine eligibility for decision making in some issues and what is allowed or constrained. They also outline procedures that must be followed, information that must or must not be provided and what trade-offs assigned to affected individuals (Jaspers, 2003). The institutional structures allow for democratic power sharing (Saravanan, MacDonald, et al., 2009). Also it facilitates stakeholder's coordination and is a means to empowerment (Mostert, 2000). Roles refer to well defined rights and responsibilities and must be reflected in policies, laws and administrative structures. Moreover stakeholders need to be structured through effective organization and procedures and each must know of its own roles and responsibilities as well as that of others (Bandaragoda, 2000). Another critical part of institutional arrangements is the coordinating of the institution as it forms the basis of integration. They facilitate conflict resolution. It entails coordination of different uses and users of natural resources, set rules and policies organizations related to management of water resources (Bandaragoda, 2000).
	For this study institutional arrangements will refer to laws, rules and regulations (legal framework) that enable or facilitate decision making and takes place within an organization. Further they include the roles and responsibilities and coordination aspects (Bandaragoda, 2000, Jaspers, 2003, Saravanan, MacDonald, et al., 2009)
Participation	"The practice of involving members of the public in the agenda setting, decision-making and policy-forming

	activities of organizations/institutions responsible for policy development." (Rowe and Frewer, 2005). Participation can be described as "to take part or be involved in something". Public participation in integrated water management is therefore defined as "the involvement or taking part of all the people of a community in an equitable, efficient and sustainable use and management of available water systems." (Van Ast, Rosa, et al., 2005). "Involvement process starting from supporting individual community initiatives, acting together, deciding together, consultation and information" (Wilcox, 1994). Arnstein (1969) ladder of participation, equates citizen participation to mean "redistribution of the power for inclusion of everybody in political and economic processes of their government." "A Process of providing opportunities to citizens or populations to take part in political and social decision making of initiatives that affects them." (Katharina, 2013). It is creating partnership where the individual and communities engage by playing different roles. When partnership is established the roles become clear and transparent (Skinner, 1995). Participation focuses on collaboration, cooperation, agreements given the management of a 'common pool' resource (Huitema, Mostert, et al., 2009, Franzen, Hammer, et al., 2014).
Stakeholders	Stakeholder refers to "person(s) or organizations with an interest that are affected or can affect a certain decision. In this case, decisions on river basin management." (Reed, 2008). He further argues that the term stakeholder is preferred in environmental context as opposed to public, because dealing with people who have an interest in a certain aspect proves easier. Moreover, stakeholders include business and industry organizations, community organizations, government entities and other organizations and individuals with a particular concern or interest. Public is distinguished from stakeholder, whereas public seems to be the unorganized or unstructured individuals and stakeholders is a group of people organized and share a common interest and stake in a particular system or issue (Luyet, Schlaepfer, et al., 2012).
	For the purpose of this study, Stakeholder's participation will be used to refer to the involvement of an organization or individual who have a stake or bargaining power, is affected or affects a certain issue or activity or decision making necessitating collaboration while including the marginalized in the management of the river system. The stakeholders here being the organization and individuals (government, and non-governmental) who take part in the lower Rupingazi river basin management. That is, the Government, NGOs and communities (representing different categories of consumptive and non-consumptive water users in WRUA).(Reed, 2008, Van Ast, Rosa, et al., 2005, Luyet, Schlaepfer, et al., 2012, Arnstein, 1969, Bandaragoda, 2000, Huitema, Mostert, et al., 2009, Rowe and Frewer, 2005, Jaspers, 2003)

3.2.1 Variables and indicators

Table 2: Variables and indicators matrix

Variable type	Main variables	Sub variables	Indicators	Description	Data collection methods
Independent Variable.	Institutional arrangements	Legal framework	Presence of rules, regulations, law or policies for river basin management	To find if legislations are available and if they guide human behaviour	Semi-structured interviews Document analysis
			Implementation procedures or mechanisms available.	To find out if there are conflicts in enforcement	Semi-structured interviews, Document analysis
			Presence of organizational structure	To check how the organizations are ordered for engagement	Semi-structured interviews, Document analysis
			Provision of the financial and technical support mechanisms	Find if there is support towards participation efforts in water management.	Semi-structured interviews, Document analysis
		Roles and responsibilities of actors	List of different actors in water management	To check if the actors in river basin management are known	Document analysis and interviews
			Clear assigned roles and responsibilities	Check for any duplication or overlaps that may lead to conflicts	Document analysis and interviews
			Availability of mandates or roles provision in water management laws	Find if the power of performing various functions is enshrined in the law	Semi-structured interviews, Focus group discussions
		Coordination of the water resource management	Presence of a coordinating body for the management of the river system.	To check if there is a body that is charged with coordinating other actors in river basin management for effective management	Semi-structured interviews, Focus group discussions
			Presence of defined horizontal and vertical interactions	Find if there is harmony between different levels national and at the local (county) level	Semi-structured interviews, Focus group discussions
			Presence of coordination meetings held	Verify the interaction of different stakeholders that enable participation	Semi-structured interviews, Focus group discussions
			Presence of conflict resolution mechanisms	Find how the conflicts arising from the difference in interests are handled to ensure continuity in engagement	Semi-structured interviews, Focus group discussions
Dependent Variable).	Participation.	Involvement of individual or an organization	Presence of the mechanism, dialogue's or negotiations undertaken in river basin activities	Check for interactions between actors	Semi-structured interviews, Focus group discussions
			Frequency of meetings and forums by the WRUA and other actors to plan and make decisions	Frequency of WRUA and other actors to plan and make decisions	Semi-structured interviews, Focus group discussions.
			Common objectives /interests towards water management	To find if they have common agenda towards water management	Semi-structured interviews, Focus group discussions
			Presence of resources or budgets committed for water resources management	Find how voluntarily they take part.	Semi-structured interviews, Focus group discussions

		Inclusiveness	The number of Women and youths, the 'special' groups in leadership and activities river management	Check if there is provision for all to have a stake more so the marginalized and women in water resource management	Semi-structured interviews, Focus group discussions
			Consultations meetings between the government and the WRUA(community) on decision making	Are there enough meetings to deliberate on the issues of water management and are all included	Semi-structured interviews, Focus group discussions
			Types of information exchanged between the stakeholders	To check if the stakeholders feel empowered through communication for information flow	Semi-structured interviews, Focus group discussions
			Opportunities available or provided for implementation of agreed joint plans	Check if there are opportunities or deliberate efforts	Semi-structured interviews, Focus group discussions
		Collaboration	Presence of agreements or memorandum of understandings (MoU) with actors and the WRUA	Formal commitments and clarity on level of interaction.	Semi-structured interviews, Focus group discussions
			Available capacity in terms of training, awareness and technical skills provided	To check if the stakeholders are empowered to understand their roles and how to interact with others for in water resource management	Semi-structured interviews, Focus group discussions
			The number of activities initiated by the stakeholders or WRUA that were implemented	To show the ability and willingness of the stakeholders to work together towards the river basin management.	Semi-structured interviews, Focus group discussions

3.3 Research strategy

3.3.1 Research type

The research is explanatory and sought to explain the link and relationship between institutional arrangement and stakeholder's participation in the lower Rupingazi WRUA. To answer this research first the understanding of the two variables was done theoretically. Based on that understanding the institutions present within the lower Rupingazi river basin (legal framework, roles and responsibilities and coordination) are outlined. Equally the identification of the known stakeholders and their functions to understand the relationships they have with the river basin management. Finally using explanatory method the institutional arrangement the influence on stakeholders in lower Rupingazi WRUA is explained.

3.3.2 Research strategy

Case study strategy

The research adopted a case study strategy. A case study is defined as empirical inquiry that examines an existing phenomenon in depth in its real context where it's difficult to isolate the phenomena from the context (Yin, 2009). It is characterized by; small research units numbers, a lot of data generation, in-depth inquiry, strategic sample selection, observation of phenomena, use of qualitative data and research methods and aims at the whole picture of the object (Verschuren and Doorewaard, 2010).Further, Yin (2009) posits that a case study answers why' and 'how' questions, the researcher cannot manipulate the research units and the focus is contemporary or current.

In this study the researcher wanted to explain the influence of institutional arrangement on the stakeholder's participation in lower Rupingazi WRUA river basin management over time, to understand how participation was before the water Act 2002 and the current status. The researcher has no control over the phenomena therefore will be studied in its natural state and reality through empirical data collection. On the other hand the phenomena of participation is more related to human behaviour which is most suited to be understood though their perceptions, feelings and attitudes which are best covered by use of qualitative approach.

Therefore the case study approach was most suited since the study aim was to gain in-depth insight into the subject and not generalization of the findings across the population. Moreover, case study strategy allows for an in-depth generation of data through interactions with the people considered to be public and stakeholders within the river system. The strategy is a single case study which was studied in depth with the river being the unit of analysis. The different stakeholders were interviewed to give their views on the institutional arrangements influence on their participation in lower Rupingazi WRUA river basin management (Verschuren and Doorewaard, 2010). The research units are small and based on the researcher's knowledge respondents were selected for the purpose of study (Thiel, 2014).

Challenges of the case study design are outlined by scholars and mostly relate to validity and reliability. The case study is known to have some bias based on the subjectivity of the researcher (Yin, 2009). Also the results of the study cannot be generalized. The issue of how to ensure validity and reliability is addressed under the validity and reliability in this chapter.

3.4 Data Collection Methods

This research study embarked on primary data collection as the main technique and secondary data was also be used where necessary to answer the research question.

3.4.1 Primary data

The data was collected first hand by conducting a one on one interview with the respondents by use of semi –structured interviews with open ended questions. The semi structured interviews were used to enable the researcher get the opinions, feelings, views about their engagement in the lower Rupingazi WRUA river basin management. Semi- structured method was selected as a method of collecting data because the researcher has some knowledge about the phenomena but required the respondents to provide in-depth knowledge and experiences in their engagement in the river basin management. It is flexible in the sense that it provides interaction with the respondents and can ask questions and seek deeper understanding while the story is told by the person.

The issue of participation in river basin can only be explained by the people who live within the river system(basin) because they understand better how the laws, regulations and rules affect them and more so will give their experiences on their participation or lack of it.

The focus group discussion was used for gathering or supporting the interviews from the persons interviewed in the Water Resource Users Association (WRUA) institution.

Observation was not used as proposed before proceeding for data collection because no field activities were being undertaken by the WRUA through stakeholder's participation during the data collection.

3.4.2 Secondary data

The secondary sources data was used from the government institutions, the projects and Water Resource Users Association (WRUA). This data was used to answer the sub question in regard to the organization structure and legal framework and mandates that was documented in laws or policies. The secondary data was used to supplement and triangulate the information acquired from the interviews from the respondents. For this research the sources for secondary data included, the laws, policy documents, strategic plans, Sub Catchment Management Plan (SCMP), website materials mostly the legislations that are related to participation in river management.

3.5 Sample size selection

According to (Neuman, 2006), qualitative research is more concerned with the units or cases that can provide an in-depth understanding or experiences of a certain context or the relevance to the research question. This research employed non-probability sampling technique because this research type follows a qualitative approach (Neuman, 2006). Also this research focused on those who were involved from the mobilization and formation of the lower Rupingazi WRUA after the establishment of the institutions in 2005 following enactment of the water Act 2002. This is because they subjects were more knowledgeable on the processes before and current institutional arrangements that influence how actors are involved in the management and implementation of the activities of the river system.

Purposive sampling method was used to select the respondents or Key informants to interview based on researcher's experience that they were more knowledgeable about the topic being researched on. Also some respondents from the government institutions were identified by use of snowball sampling where other selected respondents indicated other possible respondents most knowledgeable about my topic (Neuman (2006). Neuman (2006) further describes Quota sampling as selecting cases from different groups or sub groups.

Respondents from the WRUA were selected by Quota sampling as they manifested similar characteristics of either one being a committee member, ordinary member and other riparian members (land adjacent to the river) who may not be included in the WRUA. The identified

respondents that were interviewed included the governmental institutions, projects and the Water Resource Users Association members and non-members selected on the basis of information they were found to have on river basin management.

Table 3: Identified institutions and respondents during the data collection

Institutions identified	Category	Actual	Methodology
Water Resources Management Authority (WRMA)	Government	3	Interview
National Environment Management Authority (NEMA)	Government	1	Interview
County Department of Water	Government	2	Interview
County department of Agriculture livestock and fisheries	Government	2	Interview
Kenya Forest Service (KFS)	Government	2	Interview
Upper Tana Natural resources Management Project(UTaNRMP)	Project	2	Interview
Lower Rupingazi committee	WRUA	4	Interviews.
Lower Rupingazi WRUA members (5-10)	WRUA	1 (7 members)	Focus group
Riparian members	Non members	3	Interviews
Total		20	

With the time frame given it was only possible to conduct the 20 interviews out of the intended 22. Also it is worth noting the above categories of institutions were interviewed based on their knowledge and engagement as compared to the rest**.** The focus group had seven members and due to unavoidable circumstances three members could not avail themselves as had been anticipated. However the researcher was able to capture the intended data from the focus group which proved to be in consistent with the data collected from the individuals interviewed within the WRUA management committee.

3.6 Validity and Reliability

3.6.1 Validity

Validity is classified as internal and external. Internal validity is the extent to which the research instruments measure what they intend to measure while external validity refers to the extent to which the findings are generalized or applicable to the population (Thiel, 2014). Based on this, case study results are not generalizable to the whole population owing to the fact that the research is only done within the context (Yin, 2009). Another challenge may be the research units may give the socially accepted responses rather that the true picture on the ground (Thiel, 2014).

Bearing that in mind, the field work main data collection method was in-depth interviews with key informants. However to ensure validity the data was triangulated by means of secondary data for verification. The data sources included the reports and government legislations. Equally the members check was done until the saturation level for most of the category of stakeholders. A focus group discussion was also done with WRUA members too to countercheck what the leaders in the committee said (Thiel, 2014). However while observation had been proposed as a method of triangulation this was not possible given that no particular activity was being carried out during the time the data was collected. Debriefing after the interviews to ensure correct data capture and understanding was done.

3.6.2 Reliability

Reliability refers to the accuracy and consistency of the instruments measuring the variables (Thiel, 2014). The challenges of reliability in a case study strategy emanates from the instrument's inability to measure accurately and be consistent when applied to data collection (Thiel, 2014). Further there is high level of subjectivity from the researcher owing to the qualitative nature of data collection methods.

To deal with this challenge, the researcher developed instruments carefully guided by the research question variables (Thiel, 2014). The researcher tried as much as possible to be clear during the interview and gave the participant more time to explain themselves. The interviews that were both in Kiswahili and English and local dialect (Kiembu) were recorded to ensure the sentiments of the respondents were fully captured.

However due to technical error 2 interviews were not fully recorded therefore the researcher made use of the notes made during the interview and the same was triangulated with secondary data.

3.7 Data Analysis Methods

The collected primary data (recorded interviews) that was in Kiswahili, English and kiembu was translated and transcribed. Then the typed data (word documents) were cleaned and transferred to Atlas ti programme.

Using a code list that the researcher had prepared and continually adjusted, the transcribed data was then coded as per the key topics identified. The code list is annexed at the end of the thesis ***(Annex 2).***

Thereafter various outputs were later produced from the programme. The outputs were then used by the researcher to write the findings in Chapter 4. It is important to note the research is qualitative hence no quantitative data but rather people's perceptions and feelings about the whole phenomena.

The secondary sources of data were also analysed to back up the interviews and confirm the information provided by the respondents. The findings generated were used to answer the main research questions in chapter 5 and draw conclusion and recommendations.

However it is worth noting since the type of approach chosen was qualitative (case study), the findings and conclusions will however not be generalized but are a reflection of lower Rupingazi sub catchment river basin management context (Yin, 2009).

Chapter 4

4.1 Introduction

This chapter presents the findings in the field regarding the data collection. The primary data was collected through in-depth interviews and was triangulated using the secondary data. The data was analysed using atlas ti and the outputs generated to help the researcher articulate the findings.

4.1.1 Overview of lower Rupingazi WRUA

The overview of the WRUA describes how the organization was initiated and how it is managed by the local water users. Just like any other institution has a history, so does this WRUA as was described both by the local community and the government officials. The WRUA was initiated back in 2000, following many challenges that occurred back then as depicted in the quotes below and further in box1;

Respondent 11;

> *"In fact people died in 2000. There was no water in the market from a tank with water where women selling Sukuma wiki were getting water. So they were getting water from vendors from Matakari the nearest river yet the sewage system was flowing into it and the water levels were very low and other parts had dried. After people died there was an outcry because it affected even neighbouring districts like Chuka, Kirinyaga. Keruguya, Nyeri due to of marketing transfers. All key stakeholders in the line ministry and the community came together and we formed a group which was later translated to what is called WRUA."*

Respondent 17;

> *"The community wanted to be part of the solution. This was an eye opener. So the government and the community representatives held a meeting and after a long discussion it was agreed on some issues. They drew a rationing Programme, to share the water equitably. Also they were informed to move away from the riparian. The community also understood that the solutions lie with them."*

Respondent 16;

> *"……..but then we were told that no WRUA will be funded not having reached more than 100 km^2. By then we covered 62km2 as kapingazi sub catchment. From there we were to merge with lower Rupingazi and we did that and covered an area of 123 km^2."*

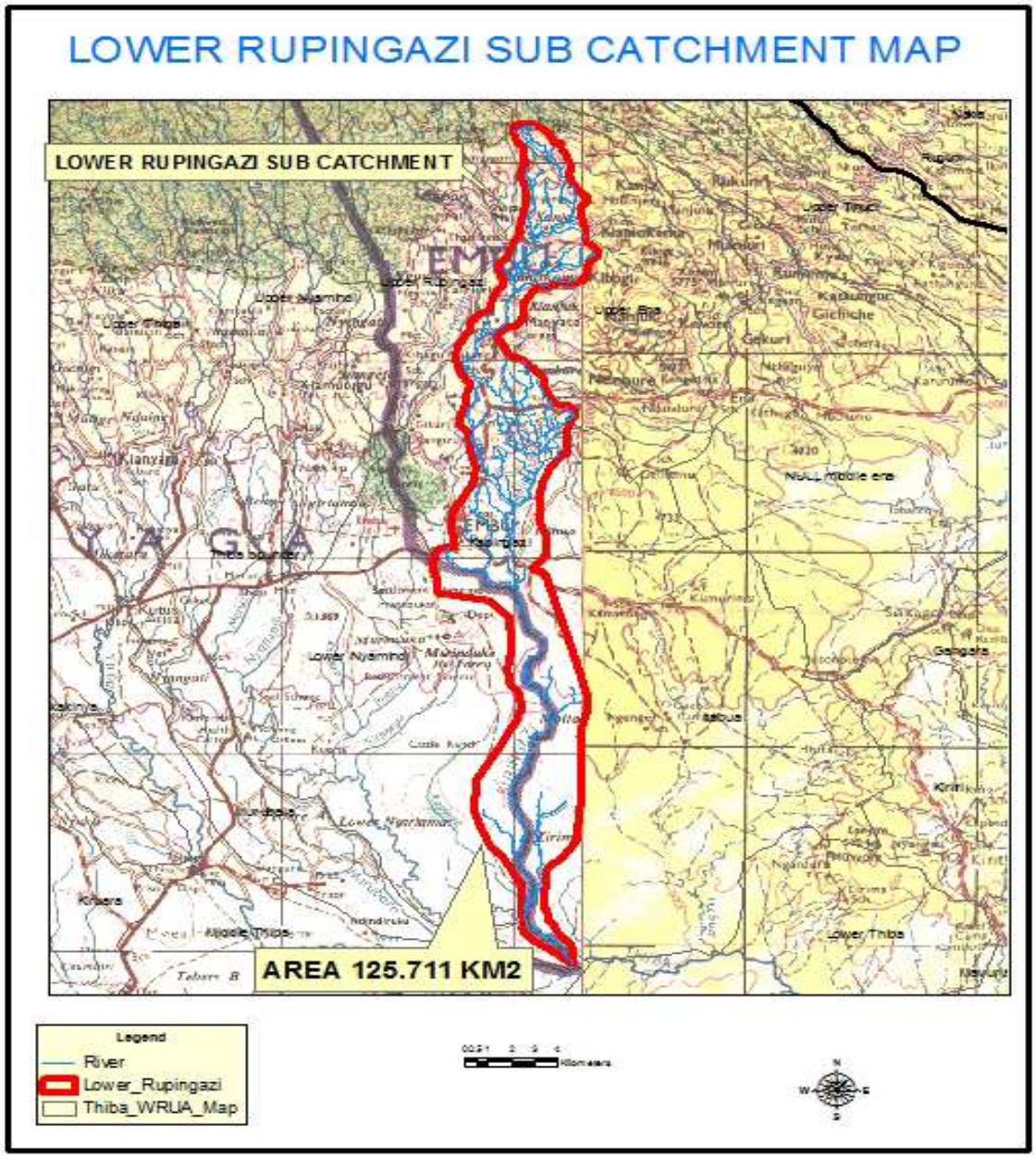
Box 1: Brief history of the lower Rupingazi WRUA association

In 2000 before the water sector reforms a group of water users came together to resolve their water problems. The Kapingazi river (major tributary of Rupingazi river) had dried up due to uncontrolled abstractions and diversion of the river. Also the river was heavily polluted by people washing clothes in the river, coffee factories discharge wastes in the river especially on the upstream. Further the catchment was degraded and riparian zones encroached. The municipal water supply at the time could not supply water because the intake at the source ran dry. As a result the situation was worsened after the death occurred in 2000 after contamination due to use of raw water in the market from one of the one of the streams in town that was polluted with raw waste discharge. Consequently water projects at the time and the community demonstrated to the then District water offices to complain and they met to deliberate the issues. The first step taken after the meeting was an agreement of sharing the scarce resource through a rationing programme to minimize conflicts. Then later they embarked on other measures to stop the illegal furrows that lead to water wastage among others. At that time the group formed known as Kapingazi water users group. Thereafter the reforms and Water Resources Management Authority (WRMA) came on board in 2005, the group was formally taken on board and after realizing the necessary requirement of an association was registered by WRMA initially as Kapingazi Water Resource Users Association (WRUA) managing kapingazi sub catchment (62.35Km2). Later the area of average was extended in 2014 to manage larger area covering 123KM^2 changing name from kapingazi WRUA to Lower Rupingazi WRUA.

Organization

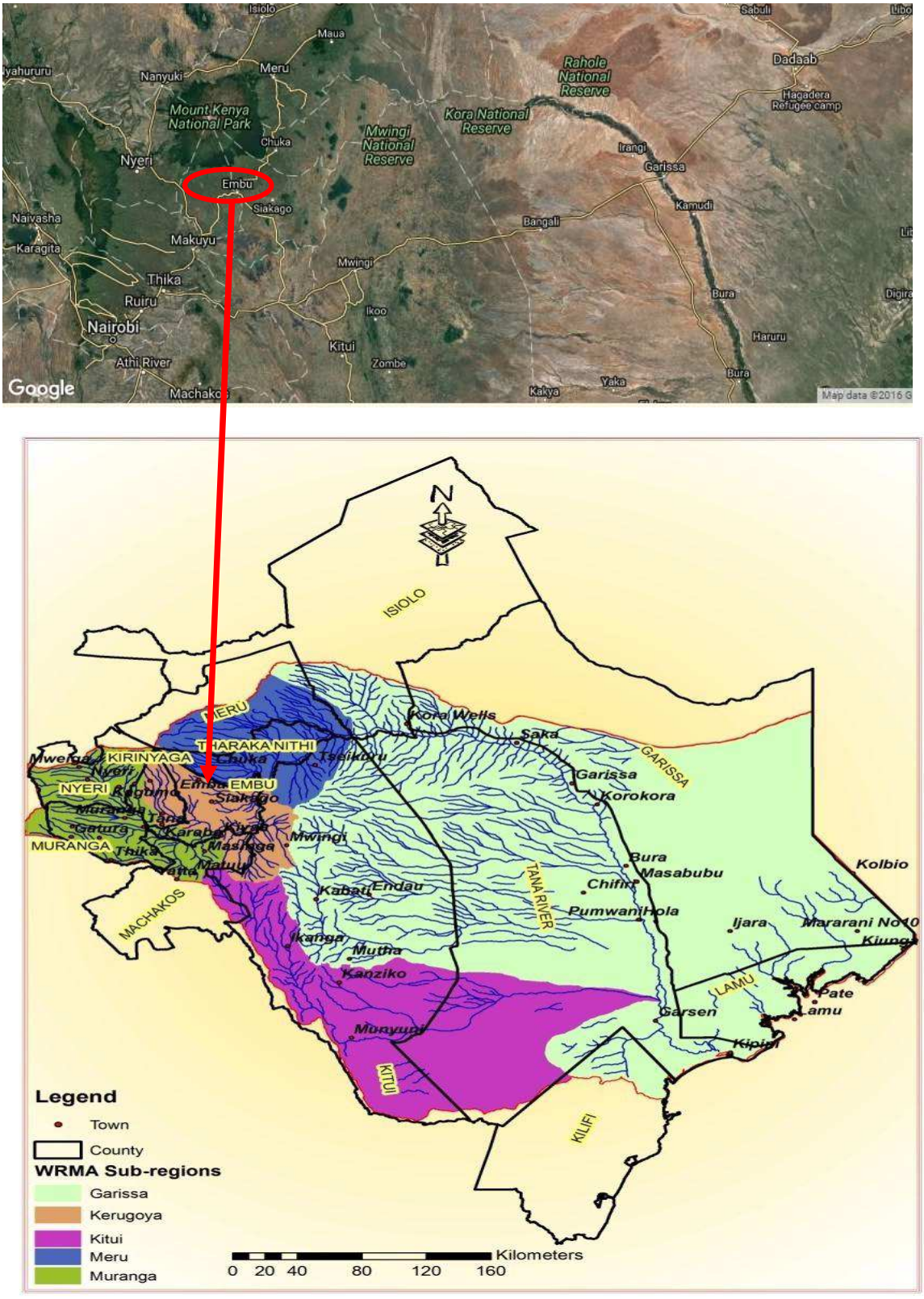
Lower Rupingazi WRUA sub catchment falls under Thiba sub-region of Tana catchment area (basin), one of the six catchment areas in Kenya.

Figure 8: Map of delineated lower Rupingazi sub catchment



Source: (WRUA, W., 2014)

Figure 9: Map showing location of lower Rupingazi sub catchment within Tana basin



Source: WRMA, 2014.

Further this sub catchment is managed by a management committee of 21 members elected from all over the sub catchment representing the upper, middle and lower zones of the sub catchment. They represent the executive committee and other subcommittees namely Finance, Monitoring, Procurement, Livelihood and the climate change. This is in accordance with their constitution. The operation cost of the organization is met through membership fees from registrations and monthly subscriptions. Current membership is over 35 and projects though the mobilization of the lower zone of the sub catchment is not yet done as outlined below;

Respondent 13*;*

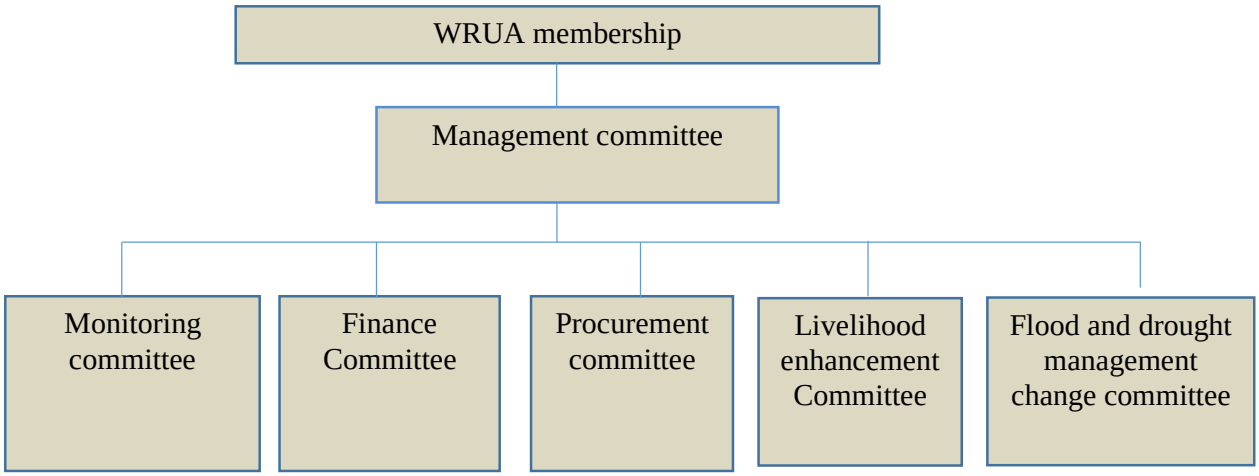
> *"The WRUA is composed of management committee of 21 members. 9 are women and 12 are men inclusive of youth from upstream, midstream and downstream. The committee has the executive office of 5 members who are the chairman, vice chairman, secretary, vice secretary and the treasurer. There are 2 women and 3 men, other committees are the procurement, finance and the monitoring committee, livelihood and climate change."*

Respondent 16;

> *"We have ordinary members (riparian), institutions like schools, colleges, universities, coffee factories and the water project supply water for domestic and irrigation, individual abstractors."*

The secondary data review, summarizes the organization of the WRUA institution as outlined in the figure below which confirms the empirical findings.

Figure 10: The organization structure of Lower Rupingazi WRUA.



Source: WRMA, 2014

The above figure illustrates the organization of the WRUA. The management committee provide an overall oversight and ensure proper utilization and accountability of funds. The sub committees are responsible for independent responsibilities in financial management, procurements, monitoring, livelihood enhancement and flood and drought activities.

4.2 Current institutional arrangement for management of lower Rupingazi river basin.

4.2.1 Laws, rules and regulations (legal framework)

The empirical findings indicated that there is presence of the legislations. The management of the lower Rupingazi is guided by the Water Act 2002. Additionally, it was found out that there are other legislations that are related to the management of lower Rupingazi sub catchment. The respondents mentioned the following; Agriculture Act 318, Environmental Management Coordination Act (EMCA) 2015, Kenya Forest Act 2005, Public health Act, Constitution of Kenya 2010, Kenya Forest Service (KFS) Act, Land Act Cap 280 2012, wetlands regulation (river bank regulations 2009), County government Act no 17, 2012 and Agriculture (farm forestry) rules 2009

The legislations are described below as highlighted by respondents' perception and verified through secondary data:

1. **Constitution of Kenya 2010 (COK 2010)**

This is the supreme law in Kenya upon which the other Acts are anchored. However it is noted that since it came in force in 2010 all the legislations that were in force before then are subject to revision. The COK 2010 brought about the devolvement of government to counties. In relation to water, the Act recognizes that every citizen has a right to clean safe and adequate water (43(1d). Equally in accordance with the 4th schedule the management of the water resources remains a national function but only a few functions have been delegated to the county governments.

The findings indicate that the respondents are aware about the constitution. Those in management stated they had been trained by WRMA on the constitution and they know that water resource management is a national function.

However it was not clear on how they are supposed to work with the county in river basin management. The relationship with Embu county government has not yet been built or laid down for WRUA to understand how to deal in the implementation of the constitution. One of the respondents P16 explained;

> "*Changes have come though the constitution of Kenya and counties have a role to play in the catchment but it has little effect on the role of the WRUA up to now. WRUA is still under WRMA and not the county but national government."*

2. **Water Act 2002**

The findings indicate that the Water Act 2002 is currently in force despite it being reviewed. This water Act created many water institutions Water Resources Management Authority (WRMA) being one is the lead agency in water resources management in the country.

The Act provides a mechanism for involving stakeholders by WRMA mandated to facilitate formation of the WRUAs for cooperative management and conflict resolution (section 15(5). Additionally it oversees the appointment of Catchment Area Advisory Committees (CAACs) in Article 16 as a way of engaging the public in water resource management.

The findings indicate that in terms of organization the structure is clear from the National level to the regional level, sub basin level and at the community level where the community are organized into associations (WRUAs) for management of the catchments. Catchment management strategies for each of the 6 basins in the country are developed in reference to the National Water Resource Management Strategy (NWRMS) as tools for ensuring participatory management, as was explained by one of the respondents;

> "*In Water Act 2002 the services provision had issues but for water resource management structures, the legal framework is very clear. From the national level all the way to the community level (WRUA).*"

Further at the community level (WRUA level), a Sub Catchment Management Plan (SCMP) is developed for each sub-catchment to implement the Catchment Management Strategy (CMS). In this case therefore we find out there is implementation of this law given that the WRUA participates and developed their SCMP in accordance with the law and strategy.

Another mechanism that is provided for in the current Water Act is the financial and the Technical support to the WRUAs as it was noted by one of the respondent P5;

> "*The Water Act also brought in technical and financial support under the current arrangements to the communities that shows the value the government puts on the contributions of the communities by trusting them to be involved in the management of own resources.*"

The review of the documents indicates that, the WRUA through a mechanism of WRUA Development Cycle (WDC) obtains finances from Water Services Trust fund (WSTF) through the technical Support of WRMA. WSTF is the only recognized body that is mandated to provide funds to the WRUAs for conservation purposes. However there are other alternatives funds that are sought by the WRUA from projects, donor agencies and other partners because the fund from WSTF is not sufficient as was described by respondents one who said;

> **"***There is an institution called WSTF is the one that gives us funds when we write proposals. This is an institution like WRMA created through the water sector reforms although we have written a proposal for funding to UTaNRMP as well because WSTF had no funds for WRUAs for a long time.*" and "*we have written proposals to Constituency Development fund (CDF), WSTF and Upper Tana Natural Resources Management Project (UTaNRMP) to seek for funding.*"

Further review of documents confirmed that indeed the Water Act 2002 section 83 created WSTF to assist in financing.

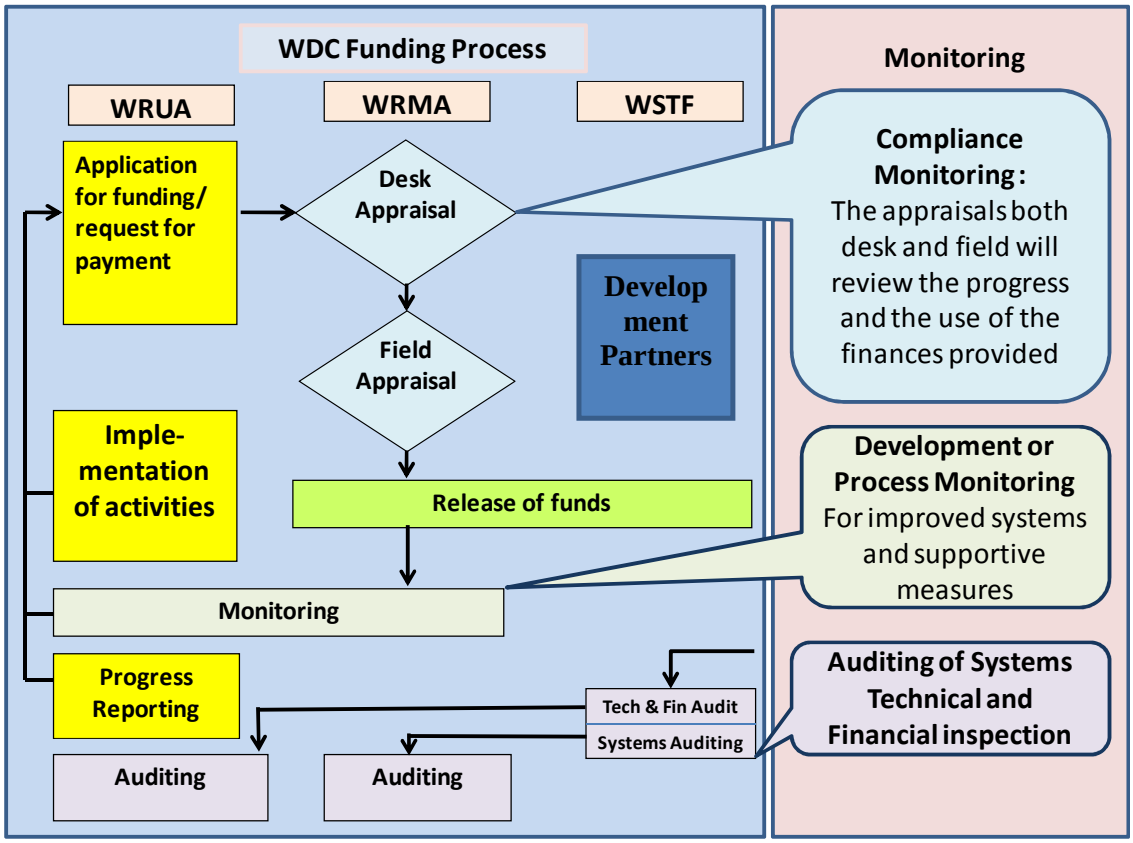
> Equally Section 83(1) "*There is hereby established a fund to be known as the Water Services Trust Fund.*" 83(2) "*the object of the Fund is to assist in financing the provision of water services to areas of Kenya which are without adequate water services.*"

WRMA funds raised from permitting can only be utilized for performing functions as may be directed by the Minister (Section 79) and mostly do not cover financing WRUA. However at times out of necessity and availability of funds WRMA supports catchment activities as well. In view of this a respondent from WRMA confirmed;

> "*……WRMA is also constrained and does not have the finances to provide to the WRUAs.*"

According to secondary data, WDC funding process entails an eligible WRUA presenting *a request for funding* to WRMA. The application is subjected through an appraisal process by WRMA. First is the *desk appraisal* to verify the details against the eligibility criteria set. Secondly is the *field appraisal*, to confirm the existence of the WRUA, officials and the stakeholders. If the application passes the test or is approved WRMA and WRUA and WSTF/development partner enter into a contract that governs the arrangements and the conditions for further transfer and utilization of funds. Once the *funds are released*, WRMA provides technical support and *monitor* progress according the contract. The WRUA writes a *progress report* entailing the achievements, the challenges and financial accountability. Based on the report, an *auditing* is done incorporating the three parties WSTF, WRMA and WRUA. Once the WRUA passes the audit test, a new application for funding is made. *Subsequent requests* for funds are made and the whole process is repeated hence the term WRUA Development Cycle (WDC) due to the 'cyclical' nature (WRMA, 2014).This is depicted in figure below;

Figure 11: WDC funding Process



Source: WRMA, 2014

Therefore the findings indicate that the Water Act 2002 is in existence and provides a financing mechanism, a key element for institutional arrangement (Saravanan, MacDonald, et al., 2009). Equally technical support is incorporated. However the finances are not adequate or availed accordingly necessitating further search for alternative finances by the WRUA yet it is not easy.

3. Water Resources Management (WRM) Rules 2007

Further there exist WRM rules 2007 meant to implement or give effect the water Act 2002Act. The rules give a guideline on engaging the stakeholders in management of the water resources among others. The Rules also provide the penalties to the offenses against the provisions of the Water Act.

As noted by one respondent P8;

> "*I know you are prohibited from washing clothes, cars or throwing things that pollute water into the river. You are not supposed to divert water from the river like making furrows. It is not efficient. I learnt about the laws because I made a mistake of the diverting water. The people form the ministry came and was given a warning and I stopped. I was ignorant of the rules then but now I understand and I got a permit."*

Another one also noted,

> *"I found one time that one of my eucalyptus trees was marked for removal. If you don't remove the government will remove and you'll have to pay for the costs."*

The secondary data also confirms that the Rules give clarity towards participation of the water users in water resource management. WRMA rules 2007 Sect10 (1 to 14) guides on the organization of the WRUA through registration for recognition and collaborative purposes. The Rule also requires for strategy for stakeholders participation established and article 28 as well requires the involvement of the WRUA through comment and public notification on water allocation through permitting. The rules here outline the modalities for WRUA to work with WRMA through signing of the MoU. The WRUA can be struck off from the registered associations (WRUA register) or disengaged from management of prescribed sub catchment.

Therefore this also shows that the Rules are available as a mechanism and are implemented. They guide on what is allowed, prohibited and the consequences that follow. Equally from the respondent's sentiments, there is an indication of implementation challenges and enforcement given different legislations (Biswas 2000).

4. Environmental Management Coordination Act (EMCA) 2015

As the name suggests the Act is meant to supervise and coordinate all other Acts related to environmental matters to ensure they comply. Following the devolution EMCA 1999 is repealed and EMCA 2015 came in force in June 2015. According to *respondents P6;*

> *"…..We ensure supervision and coordination of all environment matters in Kenya. First we had EMCA of 1999 and now EMCA 2015 to align with the constitution of 2010."*

> *"You see EMCA is a framework and broad, which oversees all other Acts and rules but we have Water Act that is specific to water resources. EMCA supersedes all the legislations. The Water Act and KFS Act are specific, but the EMCA 2015 comes in to enforce when the other Acts fail. The Act was enacted in April 2015."*

Secondary data EMCA 1999, 9 (1) revealed that;

> "*The object and purpose for which the Authority is established is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment."*

The findings indicate that by virtue of this law, NEMA also conflicts with WRMA in enforcement areas which demoralize the community at large and shows lack of competency in the government in enforcement. Basically the solution to some of the duplicated mandates

has not been found. However consultations across the stakeholders are done before taking actions, thus mechanisms in case of duplicated mandates are not clearly stipulated

5. **Wetlands, river banks, lake shores and sea shore management) regulations, 2009**

The empirical data indicated that while NEMA gives wetland resource use licenses for wetland, WRMA also issues the permit for wetland use. This therefore conflicts on who regulates the usage of the wetlands. With this kind of a scenario the WRUA finds itself on a crossroad as indicated in the following quote;

Respondent P3;

> "*After reporting the case to WRMA and the provincial heads it is unfortunate we still see the soil being dumped on the wetland. Now we feel demotivated. Even at the moment the soil is still being dumped and has changed the water course.…….....Those to enforce are not doing their job. Enforcement is a real challenge. The WRUA has the constitution but it's meant to guide our internal operations. But we ourselves cannot prosecute."*

Another respondent P6 pointed out that;

> *"For NEMA its 30 m from the flood level some measures are different. Some measure from the middle of the river and others from the river bank. This is not resolved."*

The secondary data shows that this regulation is focused on management of wetlands and management of the river banks, lake shore and sea shores. Public participation is sought before issuing a wetland resource permit as described in article 4(f);

> "*Provide a framework for public participation in the management of wetlands" and 5(b) "Environmental impact assessment and environmental audits as required under the Act shall be mandatory for all activities likely to have an adverse impact on the wetland."*

Therefore this shows the existence of legislations with similar mandate over the water resources that affect the WRUA in its operations and implementation.

6. **Kenya Forest (KFS) Act 2005**

The Acts is relevant in water resources management since some of the main tributary emanates for the forest and forms the largest part of the water catchment for the lower Rupingazi. It involves the communities who border the forest to participate in forest conservation and also live in harmony with the forest to benefit from the ecosystem services. KFS work with organized groups known as Community Forest Associations (CFAs) who are also double as members of the WRUA and engage them in protection activities.

In implementation of this law there was conflict on trees species to be planted on the riparian zones between WRMA and KFS. The misunderstanding affected communities and implementation due to a standoff between the two. The issue was settled at the policy level where directives were issued on the type of tree to be planted on the riparian.

However a respondent from the KFS noted no complains in implementation lately. Respondent P5 explained;

> *"There is no problem people don't usually complain about these Acts. I have not heard of any complains. Some are a binding within the law but there are a few one or two elements who fail to abide and enforcement is threatened, which we actually lack but people are aware. Hence enforcement is a challenge. People require to be pushed."*

However another stakeholder reported that WRMA and KFS impose water charges when one has to build an intake in the forest. This seems not to go well with the water users as portrayed in the quote below;

Respondent P16;

> *"On the issue of abstracting water from the forests (where the best intake zones are located) you have to pay to KFS a levy fee every month. Yet WRMA also charges a permit to abstract water."*

Therefore this shows the effects of conflict that arise out of lack of clear legislations or duplicated mandates. This explains another case of implementation challenges that affect the integration of stakeholder's participation.

7. <u>Agriculture Act 318, 2012</u>

The law is in existence and mostly emphasizes on the preservation of soil and it's fertility through terracing, protection of slopes and practice good framing practices. The act also ensures preservation and development of agricultural land (184(2d, e). Since land management also includes riparian land, the law comes into play on determining the conservation of riparian. One of the respondents P1 commented that;

> "*The riparian distance is about minimum in 6 metres on either side. This differs with WRMA so we agree on what to use depending on the situation on the ground."*

Reviewed secondary data portray that although the revised Act cap 318 2012 article 6 seems to be in agreement with the current WRM rules(116(2), it can only be expected that new Water Act and other legislation will equally be in agreement. Further, while the respondent explained that conflicting information affected their participation, it also reflects lack of awareness of some of the government and the WRUA members on the new provisions.

8. <u>Agriculture (farm forestry) rules, 2009</u>

The empirical findings indicate that the rules are related to the activities of the WRUA in the sub catchment on soil and water conservation and riparian land protection. The provisions do affect the actions of community within the sub catchment as it was observed by one of the respondents;

> "*If a farmer wants to cut a tree it must be mature and the farmer must duly fill a form which is signed by the chief, forester and the ministry of Agriculture office."*

The secondary data establishes that the Rules provides for farmers to maintain a 10 % forest cover on their farm known as "farm forestry'. It also provides for conservation of water, soil and biodiversity, and protection of the riparian land. Further it provides procedures for harvesting where one is required to seek for notification and approval prior to harvesting trees as confirmed in some of the following clauses;

> *Article 4(1) "every person who owns or occupies agricultural land shall establish and maintain a minimum of 10 per cent of the land under farm forestry which may include trees on soil conservation structures or rangeland and cropland in any suitable configurations; Provided that the species of trees or varieties planted shall not have adverse effects on water sources, crops, livestock, soil fertility and the neighbourhood and should not be of invasive nature."* Equally Article 4(20) "*No agricultural landowner or occupier shall grow or maintain any Eucalyptus species in wetlands and riparian areas."*

Therefore we see these some rules compliment the provisions of the WRM rules 2007 (118,120,123). In such a case the WRUA is therefore not challenged since the two provisions

are similar and clear on the activities allowed or prohibited on the riparian hence creates harmony.

9. Lands Act Cap 280, 2012

From the empirical findings, the respondents mention that most land owners own legally land as demarcated up to the middle of the river lands ministry. What is referred to as riparian zone by WRMA, Agriculture, Forest and NEMA, is considered to be a property of the farmer and is not left out when demarcation of land is being done. The respondents said they experience difficulties when implementing the conservation activities on the land because of ownership and conflicting legislation.

> *"Land Act that says the land is up to the middle of the river while for water Act there is a provision for Riparian area that should be used for conservation purposes. Yet on the riparian area the farmer asks for compensation when you need to construct intakes." respondent P2 says.*

Further review of secondary data reveals that the old land Act cap (280) is repealed and now the new law Land Act 2012 seems to have aligned these conflicting clauses and recognizes that it will delineate the water sources (article 2) in consultation with the relevant stakeholders as provided for in the constitution of Kenya 2010.
Therefore we find there is the same provision in the land laws which have an impact on the water management hence the WRUA and communities are bound by the same regardless of whether they report to WRMA alone.

10. County government Act no 17, 2012

According to the respondents it is the law responsible for creation of the county governments. Further the participants noted Embu County to have lagged behind due to political differences that had engulfed it since 2012 when the county governments came in force. The Act gives provision for citizen participation (section 87), public communication and access of information (sect 93), county planning (106), and financial provision (131).

The ministry under the county that is in charge of water resource management is the ministry of lands, water, environment and natural resources;

11. County departments of water and departments of environment and natural resources

County water bill is in draft form. WRMA was involved to give technical comments and guide on the part of the water resources to avoid overlap of the National and County Mandates over the management of water resources. In connection to this, respondent P18 said;

> *"WRMA is involved in advising the county bills and give input so that they don't conflict with the national mandate".*

The findings indicate WRUA has not participated so far but hope that they will when the draft bill is compiled. WRMA being part of the process, WRUA issues are suggested to be incorporated in the county laws rather than establishing other new bodies to cooperate in water resource management. The county government still awaits the national water Act 2014 to be assented so that they could anchor on it in developing the county bill.

Respondent P14;

> *"The devolved government through the counties has not been set up laws to execute new mandates."*

Another respondent said;

"……In the county there is a Lands, water, environment and natural resources. So, all the Acts are in conflict. The environment ministry will make sure you pay for riparian, yet land was allocated by the same ministry and you have to compensate the land owner and pay to the water ministry. So it's really conflicting. With NEMA you must do an Environmental Impact Assessment (EIA) for any infrastructure that is being installed on any piece of land. So a solution has really not been found."

However it is notable that the county environmental management is already established given that the EMCA has been in force since April 2015 as was indicated by one of the respondent;

"*According to section 19(1), county environment management has been established and most of the stakeholders are members of it. WRMA is member of that committee."*

The findings here imply that the transition period is marred by politics and hence since it's a new government the laws need to be carefully put in place to avoid the previous conflicts. Embu County developed the County Integrated Development Plans (CIDP) for financing and therefore since this WRUA was not involved their own plans may not have been incorporated and lost an opportunity of financing.

Review of secondary data established the presence of the legislations (National Council for Law Reporting, 2016). They are summarized below;

Table 4: Summary of Laws, Rules and Regulation

Existing laws, rules and regulation	Description on implementation, financial, organization and technical support
Laws	
Water Act 2002	*Existence:* The law in charge of management of water in the whole country. *Organization:* It provides for water management along hydrological boundaries (catchments or regions) and creation of many bodies in the water sector among them WRMA, WSTF, WRUA and CAACS. *Implementation*: Aspects of stakeholder's participation; establishment of WRUAs (section 15(5) and CAACs (Section14) and establishment of Catchment Management Strategies (CMS) in line with National Water Resource Management Strategy (NWRMS). *Finances:* The law provides for establishment of the WSTF as a body to provide finances for the Water services (83(1) (2). Guides on water use fees collected by the Authority how it is to be spent (section 79(1) (2), 81.
Kenya Forest Act 2009	The law is based on management of water catchment areas. More so the gazetted forest, even outside the gazetted areas if deemed to be water catchment areas (section 4(n). The law therefore gives authority over the water catchment areas. In this case the lower Rupingazi river originates from the forest. This is a national law but equally some functions are devolved to the county. At the community level they work with groups known as Community Forest Associations (CFAs). The law does provide for working with stakeholders hence technical support to the WRUA but no financial support.
Agriculture Act Cap 318	The law is about preservation and development of agricultural land (article 184(2(d, e). This extends to the land adjacent to the rivers and other water sources like wetlands and springs necessitating the need for collaboration in river basin management for the lower Rupingazi WRUA. The law is currently devolved to the county level function and work with community through self-help groups. Provide technical support to WRUA as stakeholder but no financial support.
Constitution of Kenya (COK) 2010	This is the supreme law in Kenya. It outlines the importance of water as a right to every citizen (article 43(1) d and therefore notes that the water resource management still remain a national mandate with few devolved functions. This is to uphold the right of everyone and avoid the conflicts that may arise out of hydrological boundaries as compared to the administrative boundaries on which the county governments are run. The 4th schedule outlines the devolved function. Equally it provides for the Gender representation (article 27(8) and marginalized groups (article 260). Important to note is that water is described as part of land by the constitution.
EMCA 1999/2015	This law mandates supervisory role and policy formulation (section 9 (1) over all the other legislations on environment. It also provides for involvement of all the relevant agencies and

	stakeholders in preparation of state of environment Reports. It also has mandates over the activities conducted near water sources. In this way the WRUA though under direct contact with WRMA is bound by the EMCA while undertaking any project within the catchment. Provide technical support but no financial support to the WRUA.
Land Act Cap 280, 2012	This is the current law after the repeal following the devolvement of the governments. The Law has authority over land management through public participation (article 4(2) (h)) and demarcation of land and water conservation (article 11, 12(2).
County government Act no 17, 2012	The law gives power and the establishment of the County government. Given that there are devolved functions including those related to water, citizen participation is encouraged (section 87). Although the WRUA has not been involved yet, the Act gives opportunity in terms of public communication and access of information (sect 93) and how their plans can be included in county planning (106) for example CIDP. Further it has provision for financial provision on the activities of the catchment but not through the WRUA.
Rules	
WRM Rules 2007	The rules give effect to the Water Act 2002. The rules dictate on the procedures and mechanisms of WRUA establishment (Sect10 (1to 14) for collaborative purposes and strategy for stakeholders participation. The rules also outline on what is allowed and prohibited in response to the activities of the WRUA. For example, protection and conservation of riparian and catchment areas (Rules 116 to 120), protected areas and groundwater conservation areas (Rules 123-126), water use and permit details (Rules 16, 22, 24, 42, 77). How the WRUA is involved in water allocation through comments on applicants forms (section 28). Other areas depicting Stakeholders participation are sections (31(1), (123(3), (118(1), and 14(2). Provides for technical support and financial support.
Agriculture (Farm forestry rules) 2009	The rules largely are for implementation of 10% farm forestry cover. This therefore affects anybody who owns land apart from being a member of the WRUA to contribute towards increased vegetation cover an activity also done by the WRUAs on the catchment especially on the Riparian. Provide technical support, no financial support.
Regulation	
Wetlands, river banks, lake shores and sea shore management)regulations, 2009	This regulation provides for the management of the wetlands, river banks, lake shores and sea shore. The regulation is clear on how to engage the public participation (article 4(f)) and Environmental Impact Assessment and Environmental Audits (article 5(b).

Table 5: Analysis of the findings on legal framework

Laws rules and regulations	Summary
Presence of laws, Rules and regulations	All the respondents confirmed the presence of laws and regulation in the river basin management.
Implementation mechanisms of the legal framework	WRUA establishment, CAACs as frameworks for participation The challenges of implementation mentioned were; ✓ duplication of the mandates of different laws ✓ lack of clarity on how to collaborate and integration many actors ✓ Lack of enforcement
Organization	The organization of the WRUA is under the national framework for water resources management. It is the lowest at the community level recognized by law. It is managed by an elected management committee as stipulated in the WDC mechanism.
Technical and Financial	The Finances are provided by WSTF or by the government through WRMA (WDC mechanism) Other sources of finances UTaNRMP and any other Donor. The inadequate financing was an issue. The government stakeholders were seen to provide technical advice in the areas mandated by law

In Summary;

There is existence of various legislations that relate to the river basin management and support stakeholder's participation. However there are challenges in implementation owing to misinterpretation, duplication. This has been mentioned by respondents to affect the relationship, interaction among the stakeholders, the implementation as well as the credibility of the government. The enforcement of the law was found to weak. Equally the technical and

financial support is provided for in the water framework. Finances were observed to be inadequate affecting enforcement. Notably no other financing mechanism for water resource management is explicitly set by other legislations although Embu county government has provision for financing County Integrated Development Plans (CIDP) which includes activities related to catchment.

4.2.2 Roles and responsibilities

According to the respondents there are several bodies with roles and responsibilities in line with the management of the lower Rupingazi sub catchment as dictated by their legislations discussed earlier.

4.2.2.1 List of stakeholders

The empirical findings indicate stakeholders to consist of the following as mentioned by the respondent; 1) The community based association (WRUA); 2) Water Resources Management Authority (WRMA); 3) Kenya Forest Service (KFS); 4) County Agricultural and livestock department; 5) National Environmental Management Authority (NEMA); 6) County Government; 7) Water Services Trust Fund (WSTF); 8) Upper Tana Natural Resources Management Project (UTaNRMP). There are other stakeholders mentioned but do not directly have a role in river management but are considered to play part they include; 9) Ministry of interior and coordination of national government formerly referred to as Provincial Administration who provide security when conflicts arise within the catchment and are used to disperse information when mobilization of activities is needed; 10) Ministry of youth gender and sports who register groups within the sub catchments and facilitate elections and 11) Constituency Development Fund(CDF) that sometimes funds water related activities.

The above mentioned stakeholders are summarized in the figure below;

Figure 12: List of known stakeholders within lower Rupingazi river Basin Management

Community (Category in WRUA membership)	Parastatals	Government	Projects/funding agencies	NGOs
• Riparian land owners • Individual water abstractors. • Domestic project water abstractors • Irrigation projects water users • Self-help groups NB: Water abstractor could be a schools, university, colleges, polytechnic, hotels, coffee factory, churches, hospital, health centres	• WRMA • NEMA • KFS	• County Agriculture • County (water and environment • Ministry of public health and sanitation • Ministry of interior and coordination of national government	UTaNRMP WSTF CDF	APHIAII Caritas (Catholic diocese)

4.2.2.2 Roles and responsibilities related to water resource management.

The following were reported as the roles and responsibilities of the key different stakeholders involved in lower Rupingazi River Basin Management (RBM);

1. **<u>Water Resources Users Association (WRUA)</u>**

Empirical findings pointed out the role of WRUA to include; protection of the riverbanks, soil and water conservation, patrolling and monitoring the river to curb pollution and illegal

abstractions, creating awareness and training the wider community on how to manage the water and environment. Another role is to mobilize and register the members, sourcing for funds for catchment activities. Further a critical role is to the involvement in water regulation in consultation with WRMA by commenting on the water permit forms before any user within a given river is issued an authorization and permit to abstract water. This goes hand in hand with monitoring and rationing water during the low flows or dry spell. Another role is to collaborate with other actors that are working within the catchment. Actually the findings indicate that WRUA's role is doing the functions of WRMA though not all, at the lowest level as one respondent P16 said,

> "*WRUA manages the river itself seeing the riparian areas are well conserved, no encroachment, and removal of water unfriendly trees. Also we ensure resolve conflicts arising from those people who have abstracted from the river, tree planting on riparian zones to ensure river flows are sustained. We ensure the river is well covered with vegetation so that even the wildlife in the river can also use clean water. Also we conserve the wetlands".*

Further, WRUA membership in lower Rupingazi was found to consist of riparian land owners, water abstractors either as projects including; schools, hotels, colleges, churches, factories, or individual abstractors and registered self-help groups that utilize water. Also the government bodies that are key stakeholders are found to be members but in the category of technical advisers. Therefore a WRUA consists of representation of the water users of different categories within the wider community.

Secondary data reveals that the definition in WRM Rules 2007;

> *"Water Resource User Association (WRUA) is an association of water users, riparian land owners, or other stakeholders who have formally and voluntarily associated for the purposes of cooperatively sharing, managing and conserving a common water resource."*

On the overall the major role of the WRUA as outlined in the water Act 2002 is conflict resolution and cooperative management of water resources as per Water Act Section 15(5).

This means that the WRUA membership contains representation of various water users out there in the catchment and is progressive. Also it shows that it is difficult to have everybody on board, something deliberately put that WRUA membership is voluntary.

2. <u>Water Resources Management Authority (WRMA)</u>

First the core mandate of WRMA is to ensure that water is available both in good quantity and quality for all users and uses. Secondly is the allocation of water through permitting and enforce the permit conditions. Third is to manage and protect water catchments through regulation. Fourth is to collect and maintain information about the catchments for decision making on water resources and lastly is to liaise and collaborate with other bodies to regulate and manage the water resources.

To effectively engage stakeholders especially water users, WRMA facilitates formation of Water resources Users Association (WRUAs) to create a platform for dialogue and participation in conservation and protection of the environment. As highlighted by a respondent;

> "*It is the lead agency. It works with relevant stakeholders and community at the grassroots level which are WRUA. The core functions are management both quantity and quality of water apportionment through permitting."*

Most of the respondents expressed that WRMA is the lead agency on the river basin management. However, when it comes implementation of the catchment activities there seems to be an overlap of some roles such as permitting wetland, riparian conservation. One of the a respondent expressed this in the quote below;

> "*To me I would say the mandate is very clear only that there are some areas where there are overlaps with some institutions especially on management of the riparian zones. The ministry of agriculture gives different message to the community. When we talk about the extent of the riparian area from the river, according to Water Act it's different from that in Agricultural Act. Also the issue of controlling a certain area along a river line contradicting. Land act talk of the owners of the Land owning land up to the middle of the river. So those overlaps bring in a lot of conflicts in executing the mandate. Therefore I feel there is need for harmonization to for all stakeholders to be on the same page."*

Further review of secondary data, confirmed WRMA function is outlined in section 8 of the Water Act 2002. This therefore shows there is overlapping of roles among the government stakeholders that may lead conflict in implementation of activities.

3. County government –water and environment departments

The county government has the roles related to water resources management as articulated in the fourth schedule of Constitution of Kenya below;

Box 2: WRM functions allocated to the National and county governments

Water Resources Management Functions allocated to the National Government
Water Resources Management functions that have been allocated to the National Government are spelt out in items 2, 11, 19, 22, 24 and 32 of the fourth Schedule, part 1, on distribution of functions. These are:
Section 2: The use of international waters and water resources-implying control and regulation of water use everywhere in the Republic. This is irrespective of where the source is.
Section11: National statistics and data on population,the economy and society generally. WRMA will provide Water Resources information for National Development.
Section 19: National Public works. Water resource development; especially on permitting and ensuring compliance to permit conditions on water retaining infrastructure and works on water bodies.
Section 22:*Protection of the environment and natural resources with a view to establishing a durable and sustainable system development*, including in particular, (c) water protection, securing sufficient residual water, hydraulic engineering and the safety of dams.
Section 24: Disaster management. Water related disasters such as floods, droughts and landslides.
Section 32: Capacity building and technical assistance to counties-WRMA is undertaking these functions on account of being a national institution and lead agency in water resources management, on behalf of the national government.
Water Resources Management Functions Devolved to the County Governments
The Constitution of Kenya 2010 has devolved the following water resources management functions to the County Governments as spelt out in sections 10, 11, and 12 together with sections 2 and 8 of the fourth schedule part 2**.**
Section 10: *Implementation of national government policies on natural resources, and environmental conservation*, including:
Soil and water conservation
Section 11: *County public works and services*, including
storm water management systems in built-up areas;
Section 12: *Fire-fighting services and disaster management*, especially on water related disasters.
Section 2: *County health services*, including:
(g) Refuse removal, refuse dumps and solid waste disposal- which have a bearing on pollution of water bodies if not properly handled
Section 8: *County Planning and Development*, including:
(b) Land surveying and mapping- Demarcation of water bodies and water catchment areas (riparian land, wetlands, marsh lands and springs) for gazettement as public lands.

Source: WRMA, T., (2014)

Consequently under the Ministry of land, water, environment and Natural resources there comes the issues of water resources. The main role of the county water department is service delivery to consumers and design community projects. To be able to provide water to all especially the community the county engages in community projects to conserve water. This

is through construction and rehabilitating of the infrastructure to enable water access form the source. Essentially the county also follows the current Water Act 2002, until the bill is assented for cascading. One of the respondents highlighted it as follows;

> *"The county is concerned with the service delivery and the designing of the water projects for the community projects. By doing these projects we are the line ministry and we deal with communities to conserve water. So in one way you cannot run away from the management of the rivers since they are the sources of the water."*

Another role is on capacity building on water and sanitation aspects to the community. Following the devolved function the county government has various functions related to water resource management as indicated in the constitution below;

The county environmental department was found to have been established and will be in charge of coordinating the environmental issues within the county and liaising with key stakeholders through a county environmental committee. However for the department of water the bill reflects the above mentioned devolved functions.

4. **National Environmental Management Authority (NEMA)**

NEMA role is to guide the government in terms of policy on all policies related to related environment, providing supervision and coordination of all environmental matters. As one of the key respondent mentioned;

> "*Our mandate is to guide the Government in terms of all policy related to the environment and we ensure supervision and coordination of all environment matters in Kenya."*

Further the review of secondary data indicates that the functions of NEMA are indicated in section 9 of the EMCA 2015. Additionally among other functions, NEMA issues effluent discharge licences as well as wetlands resource use licences. This is to ensure that natural resources are protected from pollution.

These are overlapping roles because WRMA also issue the effluent discharge control permit and also wetland use permit.

5. **Kenya Forest Service (KFS)**

The main role of KFS is to conserve the gazetted forests and natural forests. However through the participation of the community introduced via the Kenya Forest Act of 2005, there is the conservation activities extend to the farmers who boarder the forests and hence they engage in conservation of the non-gazetted areas as well. They engage and form a group known as Community Forest Associations (CFAs). They provide technical advice in tree nurseries establishment and advice on the tree species that are best suited for different areas within the sub catchment especially near water sources. Therefore they have a role on the riparian conservation through use of correct water friendly species. In doing this they also promote 10 % forest cover on farmers land. The water source of lower Rupingazi emanates from the forest so they work closely to ensure that water is managed in the forest and flows out of the forest downstream for the other users. This is legally supported by the law as respondent P4 said;

> "*Our function is conservation of forests mostly gazetted and natural forests. Although the forest Act 2005 brought in participation in forest management through Community Forest Associations (CFAs) who are communities around the forests, they are involved in conservation activities even in their farms. So there is forest extension*

on farmer's farms which is outside the gazetted area. By doing all these activities we are protecting and conserving the natural environment more so sources of water because forest is a catchment area."

Another respondent also claimed;

"*The CFA and the WRUA end up doing similar roles …so we work together*."

It was apparent that the same function of conservation is undertaken by the ministry of agriculture, WRMA and the WRUAs though in none gazetted areas hence duplication.

Within the gazetted forests, Kenya Wildlife Services (KWS) also work hand in hand with KFS to manage wildlife. By keeping guard and safety of the wild animals in the forest they prevent conflicts that may arise between the human and wildlife.

6. **Agriculture department**

Agriculture ministry is very broad but the roles that are related to water resource management are soil and water conservation including the riparian land by earmarking the distance from the riverbanks. Also they promote agroforestry through ensuring 10% forest cover on farmers land. Further they are involved and public extension services to farmers through farmer field schools, demonstration on farms to practice good farming. One respondent highlighted;

"…To ensure river banks are conserved, we normally advise the farmers to leave the required area that is 6 metres and they either plant the local indigenous trees or plants or grass for cattle. Also advise them to establish agroforestry to increase tree cover."

This shows another duplicated function since WRMA has the same function.

7. **Upper Tana Natural Resources Management Project (UTaNRMP)**

The main role is to facilitate natural resource management, water being one of the natural resources. This project supplements government objectives through facilitating projects towards poverty reduction through management of natural resources. It works in partnerships with the forest, agriculture and livestock, Water, NEMA and the Ministry of gender and youth affairs to provide technical advice to the communities inclusive of WRUA. The Project basically finances the WRUA and other self-help groups within the sub catchment to achieve the overall goal of poverty alleviation as it was explained by one of the respondents in the quote below;

"This is an upscale project of the previous activities of Mt Kenya East Pilot Project (MKEPP). The ones that did very well were upgraded that is now the Upper Tana Natural Resource Management Project (UTaNRMP). It will take 8 years 2012-2020. The real objective is to alleviate poverty within the community living in the basins which were selected about 24 of them which cuts in 6 counties Nyeri, Embu, Kirinyaga, Muranga, Tharaka Nithi and the far end we got Meru County.

8. **Water Services Trust Fund (WSTF)**

The main role of WSTF is to finance the Catchment management activities done by the WRUA. It is purely a financing body and does so through WRMA as was indicated earlier.

The secondary data indicated that an analysis of stakeholders during the development of their SCMP resulted in different roles and responsibilities of whom they work with in

implementing of their SCMP. These are in agreement with what the respondents interviewed described as reflected in the table below;

Table 6: Roles and responsibilities of stakeholders in lower Rupingazi sub catchment.

Institution	Role/responsibilities
Kenya Forest Service	Protection and conservation of water towers
Interior coordination	Law enforcement
Ministry of Agriculture, livestock and fisheries.	Catchment conservation and protection. Advice on proper land use Promotion of livestock enterprises for economic diversification Promotion of fisheries enterprise development
Ministry of Public Health	Awareness creation on water and sanitation
WRMA	Management, regulation and conservation of water resources
Ministry of Environment, water and natural resources	Environmental conservation Technical advise
Ministry of labour, social security and services.	Collaboration in registration of groups
Kenya Wildlife Service	Conservation of wildlife and aquatic habitant
NEMA	Coordination of environmental management
NGOs, UTaNRMP, CDF.WSTF CDTF,(Kirinyaga ecosystem)	Funding and empowering community towards Environmental conservation projects
County government	Funding and conservation of public land

Source: WRMA, W. (2014)

Clarity of Roles

The empirical findings indicate that the legislations provide mandate for each government institution. However there are duplicated functions that affect implementation given that other stakeholders have similar roles and responsibilities within the sub catchment

Further majority of the respondents indicated unclear roles for the county because the bill is not assented as well as lack of involvement in the drafting. Similarly since it is a new devolved government system it means that the awareness that comes with implementation has not taken place.

The table below summarizes the roles that are duplicated or performed by more than one institution as mandated by the legislations;

Table 7: Summary depicting areas of overlaps of the mandate of the stakeholders

Roles and responsibility	Actor/institution	Remarks
Riparian conservation	WRMA, MOA, NEMA	
Effluent discharge control permits/licence	WRMA/NEMA	
Catchment management and conservation activities	County environment, WRMA, MOA, NEMA, KFS	
Permitting of water inside the forest	KFS,WRMA	
WRUA establishment	Water department at county and WRMA	As per the current county water bill draft

In summary,

It is evident that the list of stakeholders within this sub catchment is not cast on stone. There is likelihood of the new entrants like NGOS, projects with an objective related to resources management. Equally there are some stakeholders who are within the sub catchment but deal with water issues outside the catchment like Caritas (NGO) that mostly works on the lower side of the county (Mbeere). It is difficult to establish or have all people involved therefore

the people or groups that are registered is an indicator of commitment to take part in water management.

On the other side, roles and responsibilities of various actors lack clarity due to overlap of roles as well as misinterpretation in issues related to river basin management. Without clarity often conflicts, confusions arise and this threatens integration and meaningful participation. More so for the members of the WRUA at the community level who implement delegated activities by WRMA yet they are required to work with different stakeholders who are bound by different legal backing.

Further findings indicate absence of laid down mechanism, to resolve the issues. Some indicated that it was resolved verbally by dialogue and agreements between the stakeholders. However once the damage is done it is difficult to correct. The conflicting issues are reported to the mother ministries and dealt with at the policy level which some members expressed dissatisfaction with because action is never on time.

This therefore affects the integration when stakeholders act without collaboration or consulting the others. While IWRM is about considering the management of water through multisectoral approach, there is a clear case of duplication and misinterpretation of the mandates as provided for in the legal framework, thus a challenge (Biswas 2000).

4.2.3 Coordination

The coordination within the sub catchment focused on finding out presence of a coordination body, if there are coordination meetings, reporting structure and chain of command and if there are conflict resolution mechanisms in case of conflicts. The findings are described below.

Coordinating body

The empirical findings indicate that respondents had different thoughts as to who actually coordinates the river basin management. Three institutions were mentioned by respondents to be the coordinating agencies. That is WRMA, NEMA, WRUA and to some they felt it was both NEMA and WRM. The reasons why WRUA was viewed to coordinate by some members was due to the fact that they were close to the local water users and interacted often with leaders while conducting patrols in the catchment. Also and its was them who championed the activities implemented as described by *Respondent 10;*

"Although WRMA is in charge of the river, they are far from the community. We are the ones who know what is happening with the river. So I think the WRUA is the one that coordinates."

WRMA being the lead agency was mentioned as the coordinator in the water resource management. It was faulted as a result of lack of specific coordination meetings across the various stakeholders other than the planning meetings or implementation of activities.

Further NEMA was mentioned as a coordinator due to the law that it is mandated to supervise all the legislations dealing with environment. However NEMA was equally faulted for not participating in activities on the ground in the WRUA activities.

Chain of command and reporting structure

Currently there are two levels of government, national and the County level. Water management being national government function, the lowest level is at the sub basin level that is at the WRUA level.

According to the law the WRUA is only accountable to WRMA. Equally WRMA, KFS and NEMA are all national parastatals except agriculture ministry that falls squarely on the

county report vertically to their mother ministry. However due to devolution the respondents anticipate there will be reporting and coordination happening at the level of the county. However the findings indicated that NEMA had already established county environmental committee, a forum that is used to coordinate national and county activities on environment as per EMCA 2015.

Water Act 2002 provides for consultation with other stake holders while undertaking various activities at sub catchment level. Equally NEMA and other government bodies indicated they usually do consultations but no provisions or mechanisms on reporting horizontally in the legislations.

Therefore, this shows a weakness in the integration of stakeholders because of lack of reporting mechanisms horizontally. They may as well miss opportunities available. One of the respondents 19 complained;

> "*You know WRUA reports to WRMA only. After we developed the SCMP with the WRUA no copy was given to us and sometimes when budgeting for community projects sometimes we refer to those plans. The WRUA needs to be giving us those reports as well. Although I must admit also we don't share because we are only accountable to our ministry."*

Conflict resolution

Most of the members reported that since the formation of WRUA when the water had dried up there has been minimal conflict over water use. However they reported advice by different government actors on the issue of riparian conservation confused them and they said clearly there is a challenge of coordination. For the WRUA they claimed that the differences in the application of the laws based on unclear legislations have affected how they implement the activities.

For example the WRUA try to engage farmers to conserve and preserve the riparian zones they are sometimes confronted by hostility and are denied entering the land as was described by *respondent 5;*

> *"The farmer may not be willing to provide land for tree planting due to his plan of subsistence farming that they depend on for livelihood and quick money. These are some of the conflicts but with discussions they get to understand. There are actually minor conflicts and we call stakeholders and solve these problems."*

However, most respondent said although it takes time for the farmers to understand, dialogue and awareness has had an impact and that is how they participate and become part of the group undertaking catchment conservation.

Some respondents cited that NEMA had come in once and agreed that the government bodies agree on interpretations before going to the community as a way of avoiding conflicts over misinterpretation of law as can be noted in the sentiments of respondent 11;

> *"…….. Also KFS, KWS, WRMA had the same conflicting because all have a role in the water management activities. So we opted to first of all solve our differences as government before going to the community."*

In general there are minimal conflicts over water use. In case of any conflict the committee resolve through dialogue but if it is beyond them then they report to WRMA for further action. Sometimes they engage local administration as a moderator during conflict resolution meetings.

Further at the level of government, they inform the mother ministries at the policy level who issue directives and in some cases they also dialogue and agree on the different interpretation and make a decision.

Coordination meetings

The empirical findings indicate that there are rarely scheduled or structured coordination meetings. WRMA as the lead agency holds annual stakeholder's forum for coordinating the region to discuss issues regarding the implementation of the Catchment Management Strategy. This is as per the WRM Rules 2007, but it is difficult to have all the stakeholders involved only representatives attend. However due lack of specific and frequent coordination forums or mechanisms for feedback and dialogue contact most of the respondent indicated a lapse in coordination as confirmed by respondent 19;

> "*WRMA is faced with various obstacles in enforcement and at times some activities are started within their catchment without their prior knowledge and when intervention is done it causes conflict."*

Within the lower Rupingazi WRUA, WRMA coordinates through the SCMP planning meetings and implementation of the activities by the WRUA. Respondent P14 explained that;

> *"WRMA coordinates by calling all stakeholders and contribute and give their technical inputs. WRMA also coordinates and advises the stakeholders who want to do catchment activities to do activities in the SCMP. Further, when the WRUA is funded WRMA organizes meetings to bring in the stakeholders on a round table and through these forums they agree to take off the activities."*

NEMA consults relevant stakeholders especially other government bodies and public before issuing licences through the EIA reports for comments. However to most of the respondents they complained of lack of meetings or being visible in the field. Therefore they said no coordination. Meanwhile NEMA also claims that they only call for public meetings within the area out of contentious issues that require to be addressed.

In summary;

There is a lapse in coordination of the actors although there were efforts by WRMA and NEMA. It is also apparent that no clarity according to the respondents over who has the mandate for coordination. Whilst NEMA indicates it is mandated to supervise all the legislations, the feeling of the respondents indicates otherwise. This outcome results from, lack of clarity and over who is the coordinator, lack of mechanism for coordinating and lack of enforcement. Further, the findings show that the legal framework is not explicit on who is the coordinator.

The reporting is mostly vertical and therefore reporting horizontally across the ministries is a challenge. Equally coordination at the lower and the higher level is rather weak, in cases of resolving conflicts that arise out of conflict in mandates further making coordination a complex affair.

The findings here agree to the study conducted in South and Eastern Europe. It concluded the overlaps of mandate within ministries and lack of round table meetings was found to challenge the coordination of water related activities.

4.3 Stakeholders participation:

Stakeholder's participation was analysed through the three variables namely involvement, inclusion and collaboration to check how stakeholders are affected by legal framework, roles and responsibilities and coordination.

4.3.1 Involvement of stakeholders

Dialogue and or negotiations

The stakeholders indicated they interact with each other mostly during implementation of the activities. For lower Rupingazi WRUA the dialogue and consultation are done through planning meetings to implement the activities, during workshops for capacity building, SCMP development, writing and guiding on proposals for funding, meetings to recruit members.

For government bodies like NEMA they engaged others through writing to relevant stakeholders to either comment on the documents as stipulated by law. For example NEMA circulated the Environmental Impact Assessment (EIA) reports to WRMA, Agriculture for their technical comments before they issue a licence. WRMA on the other hand will also hold annual stakeholder's forum the other departments are invited to share the progress of their ministries within the wider catchment.

However one of the respondents was quick to note that when invited or consulted you attend and just give input but do not facilitate. This is an indication of a challenge of participant feeling not worthwhile on the way the dialogue are set.

Meetings and Agenda

In lower Rupingazi WRUA there were structured meetings as per their constitution that guide their operation. The executive committees meetings were monthly, the overall committee quarterly and the general public yearly for the Annual General Meeting (AGM). The special meetings were held depending on the issues at hand that may require impromptu or urgent action and do not fit within the scheduled meetings. An example is when writing proposals for fundraising opportunities, water shortages, and meetings called upon by other stakeholders.

However it was apparent that given the agenda of the meetings, sometimes the government bodies were involved only when necessary to provide the WRUA with technical advice. The findings indicate they were involved during public barazas, election of leaders, awareness creation, during the planning of activities to be undertaken.

Further enquiry found out that sometimes the meetings are affected and don't take place frequently due to inadequate finances to facilitate transport and other logistics. Further the sub catchment is vast and they meet in a common place.

One of the respondents noted;

> "*The annual general meetings are not held every year as required by their constitution and need to be improved."*

Similarly general public meetings were scheduled when to sensitize or communicate to the communities about water shortages or activities that will be undertaken and their input is required as explained by respondent P15;

"According to the WRUA constitution or by laws, the committee meetings are once per quarter. Only the executive meet monthly. Mostly the meetings happen as a result of need. For example we can meet to write a proposal, when called to act on something by WRMA, training or workshop or when planning and implementing activities."

In summary meetings were conducted to engage the stakeholders which enhance interaction. However the financial obligation also determines when to meet. The financing of the activities is the surest way to enhance the interaction and participation of stakeholders within the sub catchment a gap that was identified in the legal framework. Equally the delineation of the sub catchments need to be well thought of not to be a hindrance to participation or integration efforts.

Goals and objectives

The findings reflect that the goal of the stakeholders from the community and the government perspective are geared towards well conserved catchment, pollution free environment, clean water sources bit quantity and quality, access to clean water by all, improved livelihoods, improved living standards, water use efficiency, eradicate poverty.

In lower Rupingazi WRUA the objectives of the WRUA as an association cuts across the interests of the most of the stakeholders are. Unfortunately it is not easy to meet and incorporate all the interest of the community and the stakeholders and this is where there are those who do not abide to the laid down procedures provided for in law. Further it was noted every stakeholders has goals to accomplish in accordance with the mandate and resources provided. Sometimes the stakeholders with resources take lead and may not follow the laid WDC procedures. In this case the WRUA accepts to work with available resources as long as it is within the law.

The findings indicated that water users especially irrigators, always require more water for irrigation, during dry period yet due to low flows water is rationed. Therefore conflicts and misunderstanding lead to illegal abstractions. Therefore the law is applied to curb those who go against the objectives of the WRUA and WRMA in the catchment management. This calls for enforcement of the law which at times WRMA fails.

It is worth noting that the WRUA was also constrained and bound to ensure they worked within the agreed upon objectives otherwise they risked being disengaged by WRMA in accordance with the WRMA Rules 2007.

Financial and technical capacity commitments

The empirical findings show that any stakeholder participation and commitment is vital. For the day to day running of the lower Rupingazi WRUA, leaders are not paid a salary but work on voluntary basis and so they commit themselves on behalf of the wider water users. They get transport refund and lunches from money received from membership and subscriptions fees which is not adequate, consequently they use their own money and resources sometimes. Normally not every water user pays for the subscriptions and they have to be reminded.

The wider communities contribute in kind, through provision of labour during implementation of the funded activities within the sub catchments like tree planting, attending barazas among others. However, the findings noted that there are no direct benefits or incentives for the communities and no quick gains. Further, the members expressed that the sub catchment is vast and the frequency of patrolling and monitoring is jeopardised especially with the additional extent of the boundary.

Also government bodies provided technical capacity mostly on funded activities implementation. While some respondents agreed that the officers were available whenever they were required, others on the contrary indicated it happened only when facilitation is available. Therefore that explains why the participation is visible or high during the implementation of the activities.

According to respondent P2,

> *"The challenge is that you can only work when there is finances and facilitation. Yes the technical capacity is required by the WRUA and the government officers have it."*

Other stakeholders had no specific budgets yet the WRUA was supposed to source for other sources of financial support given that the WSTF is limited and a project like UTaNRMP is time bound (8years).

Respondent P13 observed;

> *"If the WRUA can always be funded to do the activities in the SCMP, it can really achieve a lot. For example the WRUA was funded 3 years back. You can see that is a real big gap we cannot be able to do many activities like we are supposed to do. If finances are there let there be consistent funding to the WRUA for implementation."*

In summary;

The empirical findings indicated that there was involvement of stakeholders, both the government and the communities in meetings. Most of these required facilitation or resources. However when stakeholders goals are not met, simply because of lack of execution of the activities they become dormant.

Therefore, we see the involvement of the stakeholders is challenged given limited financing options that the WRUA has. The only guaranteed available mechanism for provision of funds is WSTF to enable execution of agreed upon activities. Consequently, when the funds lack participation is low. Equally when WRUA members did not contribute their fees to the association for operations, the Management never hold meetings, neither make patrols nor monitoring, and therefore they become demoralised. Equally the stakeholders only provide and commit to offer the technical advice only as mandated by their legislations.

Further findings indicated lack of integration because each government body directly is committed to the groups they directly deal with at the community level. For Kenya Forest Service they use CFAs, Agriculture use the self-help groups and farmers field schools to expedite their mandate. This also was a challenge in coordination. WRUA therefore work alongside other created groups which equally have goals and objectives to improve the catchment condition.

4.3.2 Inclusiveness

Within the Lower Rupingazi WRUA there was consideration of gender issues and special groups. This was specified in the group by –laws where gender rule 1/3 for election of leaders must be observed. The committee percentage is 9 women out of the total number of 21. A representative of one community member in the management was living with disability. The executive committee had women elected and were part of the associations' decision making team. They were 2 women out of 5 holding the positions of vice chairperson and treasurer.

Some respondents were keen to note that, the overall membership of WRUA is open to all user groups and category without discrimination. On the issue of the poor the respondents felt that by ensuring clean water in quality and quantity around the water sources benefits the poor equally because if they cannot afford the portable water yet they can get it for free from

the source. According to KFS, they had programmes for the poor who cook with firewood, and introduce the energy saving Jikos (cooking stoves) in collaboration with the ministry of energy which actually targets women to reduce the rate of catchment destruction through tree cutting. However no planned activities had been achieved but they existed in their SCMP. This was due to prioritization according to the funds availability.

From the findings it was apparent that no special meetings for the marginalised. Gender representation was considered in the meetings as a way of integrating everyone to participate in the river basin management.

In terms of communication, use of telephone to call committee meetings or pass information is used by the WRUA. Also letters were used to communicate issues and make invitations to WRMA and other stakeholders in the government for the meetings or trainings with. Mobile phones are often used as follow up. Further they wrote quarterly reports after implementation and submitted to WRMA and subsequently to funding bodies for accountability. On the other hand barazas (public gatherings) with the help of the local administration, notices, announcements in schools and churches are channels used to keep the wider community informed. The government bodies' use letters and pamphlets to share information. Public hearings were employed also.

Further review of secondary data indicated that legislations recognized cross cutting issues in the government sectors for inclusion in decision making. The Sub Catchment Management Plan (SCMP) and Catchment Management Strategy (CMS) provided for activities targeting the marginalised and vulnerable groups. However they had not been implemented due to financial constraint.

On the other way round the WRUA, had not been included in county government meetings or forums, but were looking forward towards that. Also it was established that they participated in other activities called upon by other government bodies as members depending on the activity at hand.

Further findings indicated that the law will impact on anyone regardless of being a registered member or not and consequences follow, as experienced by respondent 8:

> *"I know you are prohibited from washing clothes, cars or throwing things that pollute water into the river. You are not supposed to divert water from the river like making furrows. It's not efficient. I learnt about the laws because I made a mistake of diverting water. The people from the ministry came and I was given a warning to stop. I was ignorant of the rules then but now I understand and I got a permit."*

In summary;

On the overall the findings indicated provision of working with the marginalized in the legal framework. That is, COK 2010, 2/3 of all leadership positions must be of same gender, WRMA Rules 2007 dictate a WRUA as an association must show case gender mainstream before it can be engaged for participation in water resource management. This is in line with the principle of the IWRM of encouraging women participation. Also UTaNRMP had special funding for the groups with special interests like HIV & AIDS.

Although there was a deliberate move to have everybody on board, WRUA is voluntary and generally not everyone was willing to participate. This was highlighted by low turn outs in the public meetings during awareness creation. Therefore the law enforcement was necessary.

Therefore the legal framework do not compel people to participate rather they compel the people from doing wrong and encourage participation at free will (volunteerism). Awareness

creation was required for the community to make informed decision to take part. This in turn required investment through financing. However the law compel those in power to ensure the voice of the marginalised is included. It was mandatory to include women in WRUA leadership. Also, the disabled people are incorporated as part of conditions before they could receive funding. Furthermore, there were special programmes targeting the marginalised. This shows that the legal framework can influence the participation and inclusion of stakeholders in the river basin.

4.3.3 Collaboration

Agreements

The findings indicated presence of Memorandum of Understanding (MoU) between WRMA the lower Rupingazi WRUA that formalises the engagement (WRM Rules 2007). Equally WRMA has a memorandum of agreement with UTaNMRP and WSTF to fund the WRUAs through the WDC mechanism. Additionally when transferring money from WSTF through WRMA, the WRUAs sign contract to commit themselves on proper utilization of funds.

It was apparent that no any other formal agreements existed between lower Rupingazi WRUA and other key actors. The government bodies participated in the WRUA activities when consulted though they undertake other activities as per their legislations. Given this scenario, the WRUA collaborates verbally and more so when activities require technical support. Therefore the findings indicated there are possibilities of activities that contravene the water management being undertaken by other groups within the communities.

Respondent 17 observed;

> *"Yes there is a MoU between the WRUA and WRMA only. This is based on the water Act because the WRUA is doing what WRMA is supposed to do on the ground hence MoU is a binding document for delegation of the roles and responsibilities.*

Therefore, apart from the legal framework a formal agreement makes the roles and responsibilities clear and encourages commitment towards each party obligation and agreements. This finding concurs with the study by Franzen, Hammer, et al., (2014) that agreement was one of the characteristic that lead to successful implementation of river basin management.

Capacity building /knowledge

The WRUA was found to have been capacity built on their roles and those of WRMA and other stakeholders although training is a continuous process. Starting from the mobilization and WRUA formation, awareness was created to the wider public through barazas to enable the community understand the importance of their involvement in river basin management. The WRUA therefore having been established and under the guidance of WRMA had acquired knowledge on the WRUA organization and its own functions.

There were efforts by WRMA to equip the community with necessary knowledge and skills to enable them participate fully in management of their resources. The trainings conducted included; leadership, group dynamics, conflict resolution, finance and procurement procedures, record keeping, soil and water conservation, protection of rivers, river line conservation and fundraising as explained in the following quotes;

Respondent 16 noted*:*

> *"We were trained on financial management, leadership skills, how to manage public funds in a transparent manner and account for it. The technical assistance like reading the Regular Gauge Station (RGS) installed in the river……community is*

involved and provides data to WRMA."

Respondent P10, observed also observed;

> *"What I cannot forget is the importance of water, water use efficiency, no cutting of trees along the river but planting to conserve the riparian to provide shade hence some bacteria cannot thrive, how to avoid water contamination, avoiding washing clothes in the river because the downstream users are affected more."*

Respondent 7 added;

> *"I have been trained and know that as riparian that I should conserve few meters away from the river. I have also been trained on soil and water conservation and also how to avoid polluting water by not washing clothes in the river*."

The WRUA leaders were required to cascade the same trainings to their members and the wider community. Nevertheless leaders were found not to be effective. They only trained them when there were funded activities to create awareness. The respondent pointed out that the essence of trainings was to change attitude through understanding rather than just enforcing penalties that people don't understand. Still more trainings were required particularly the lower side of the catchment as expressed by the quotes below;

Respondent p10;

> *"The trainings and the awareness has not been created fully to the community at large only very few may have the information. It should continue."*

Equally it was noted that through collaboration there was exchange of knowledge between the stakeholders as respondent P1 noted;

> *"There is the uptake of skills from the other stakeholders about their plans. For example during riparian we learnt how to take the location using GIS. Even the government bodies benefit from the knowledge that each expertise has therefore the essence of collaboration and stakeholder's participation."*

Further the findings indicated that the government bodies were able to make informed decisions owing to the indigenous knowledge provided by the community. To some it was in improving the design for community projects, in knowing the right tree species to plant, cutting costs through identification of available local materials and skills, cultural methods of solving conflicts among others.

This therefore shows one benefit of participation is knowledge transfer and it allows integration of both indigenous knowledge and technical knowledge for effective implementation of the activities. This therefore enhances collaboration and meaningful participation of the water users. They feel their experiences and knowledge is valued more so when decisions like development of plans are made.

Joint activities and decisions

The findings indicated stakeholders that they had undertaken common activities jointly through financial and technical support. In various activities like capacity building, development of SCMP, conducting abstraction survey, river line marking and pegging among others.

WRMA carried out all activities together with the WRUA as outlined in the MoU. For the Kenya Forest Service's it was giving advice on right tree species to plant. Ministry of agriculture is soil and water conservation and the riparian marking. However, county

department of water had not undertaken any activities jointly with the WRUA. This was evidenced in the lack of legal structures put in place to deal with the WRUAs. This therefore hindered collaboration. Hence the legal framework affects participation.

However since the Embu Water and Sanitation Company that supplies the city and its environs is a stakeholder (now taken over under the county service provision) they engaged WRUA in the company's meetings as a stakeholder. This therefore is a case of how the service provision and the Water resources management interact.

Photograph 1: Enforcement activities

Enforcement : Notice to curb illegal activities by WRMA (illegal abstraction and pollution)

Source: WRMA archives

Photograph 2: Marking and pegging of river within the sub catchment.

Photos 12/3/2014: Sensitization, Marking and pegging of riparian zone of the Kapingazi river (a tributary of Rupingazi river)

Source: WRMA archives

Photograph 3: Prohibited activities on the riparian land

Washing clothes in the river and encroachment of the riparian by constructing next to the river.

Source: WRMA archives

Table 8: Summary of activities undertaken by lower Rupingazi WRUA in collaboration with other stakeholders

Activities undertaken	Stakeholders involved	Funding/Facilitation	Amount	Year activity was undertaken
Mobilization and WRUA formation	WRMA, MKEPP, MOA, PA	WRMA		
Capacity building and SCMP development	WRMA, MOA, KFS, Water, WRUA,PA	WSTF	582,800	Dec 2009
Riverbank pegging and marking	WRMA, MOA, KFS, WRUA			
Riparian conservation	WRMA, MOA, KFS, WRUA			
Abstraction Survey (data collection of all abstractors)	WRMA, MOA, KFS, WRUA	WSTF	1,885,227	2012
Soil and water conservation (demonstration on catchment conservation through terraces construction on steep farms)	WRMA, MOA, KFS, WRUA	WRMA		2012
Monitoring of Self Help Groups (SHG) activities that are under WRUA.	WRUA, WRMA, MOA, KFS	NRMP	356,000	
Water allocation(commenting of application for water) and paying for water use	WRMA and WRUA,	WRMA & WRUA		Continuous
Promotion of rain water harvesting	WRUA, WRMA, MOA	WRMA		2012
Review and rationalization of the WRUA SCMP	WRMA, MOA, KFS, County, Water, UTaNRMP, WRUA, PA	UTaNRMP		2014

Source: WRMA, WRUA reports

Summary on collaboration

The findings indicated that there was collaboration of the different governmental institutions and WRUA. Based on their mandates stakeholders were bound to undertake only those activities that were part of their legal framework. However collaboration mostly was determined by availability of finances to implement activities on the ground. Further we find that the WRUA and WRMA mostly engage the other stakeholders more because WRMA being the lead agency is implementing the mandate on water resources. Empirically knowledge, agreements on each party's responsibilities and financial availability were identified to enhance collaboration among different stakeholders. Further collaboration is anchored in the legal framework therefore the institutions only collaborate based on the legal provisions. In this case we see how the institutional arrangement affects the stakeholder's participation through collaborative engagements.

4.4 The influence of institutional arrangements on the stakeholder's participation.

4.4.1 The influence of legal framework.

First, the empirical findings indicated the legal framework influenced the organization of participation by giving power to WRUA. This is an association of different water users coming together formally to have a plat form to engage and be part of management. While lower Rupingazi was initially established in 2000 as a voluntary group of water users that came together with an objective of solving their water shortage issues, the legal framework (water Act 2002) has influenced what the WRUA membership should consist of. That is, other than the water users, the law recognized that riparian members, and government and non-governmental bodies within the sub catchment become part of the ex-members to provide technical advice. Equally the hydrological boundary was established when the delineation of all the sub basins within the country was done. That meant that the Lower

Rupingazi WRUA would only operate within the set boundary by WRMA and not in any other sub catchment. Also the authority would not deal with them just as water users only but compounded and redefined the WRUA and therefore the participation of the community was bound by the rules and regulations. This therefore was a move to entrust the water users with a responsibility other than just a beneficiary (section 15(5).

Secondly, the legal frameworks influence the community to take part in activities that improve the catchment through provisions of financing and technical mechanisms. WDC framework ensured that WRUA developed a plan and were involved in diversified activities. They became part of making decisions about their own surrounding. Initially when the water users came together before the water Act provision, they were just after water supply but did not know their actions were contributing to their problems and needed to be addressed holistically as noted by respondent 4;

> "*The issues of reorganization of the structures in the water Act have had an impact because priority on natural resources had been neglected but now it is given priority. This was not there before and the communities were never consulted by the government."*

Third the legal framework was open to inclusion of the women and more so the marginalised in involvement, the law required that for meaningful participation recognition of women must be mainstreamed as per the IWRM principles. Equally the empirical findings indicate that the community has to embrace the presence of other legislations that have the impact in regard to management of the same resources. Therefore collaboration is required.

However, the findings indicated that; inadequate financing, misinterpretation, unclear legislation and lack of enforcement were some of the issues that challenged the implementation of the laws.

The law has penalties and mechanism to prosecute and this assisted to shape the people thinking to obey as one person said;

> *"……..……the Act has charges and penalties if you look at it and the law is clear. So they have shaped the management of the river basin in terms of ensuring the environment especially water is not polluted."*

Some of the sentiments by respondents include;

P1 "*Now is better than before,……..…..while there is increased usage of water the regulations have tried to curb the menaces and bring sanity to avoid conflicts. The law has encouraged stakeholder participation."*

P2 "*The awareness has also been created on why the water must be metered and the government is there to oversee it on behalf and the good of all people. If there is no misuse of water in the river, we have been able to increase coverage and supply of water to customer and it is now sustainable."*

P2 "*There was absolutely no regulation on enforcement of the river basin before 2002. The water bailiffs in the ministry were just like guards who could not arrest or prosecute. There was no legal backing for the guards to prosecute somebody in court. The rules were not clear but with 2002, the rules are clear and a person can be taken to court and using the rules one will pay the fines and the penalties."*

4.4.2 The influence of roles and responsibilities

First the findings indicated that several stakeholders have different roles and responsibilities. However there was indication of overlapping roles of some of the stakeholders or

government bodies that impacted on the community or more so stakeholders to effectively take part in the catchment activities.

While the analysis shows that each stakeholder had a contribution to make, the overlap brought friction among the stakeholders and mechanisms for dialogue were not very clear. The community who were the recipients of the technical advice were affected. Apart from the formal agreement with WRMA, no formal agreement between the other governments bodies a fact that affected the level of participation or modalities of engagement.

There was tendency of participants losing morale when technical advice or enforcement to the WRUA failed. Some of the respondents explained the feeling when enforcement fails as a result of duplicated roles among the inter ministries yet they were supposed to perform their role of monitoring the catchment for illegal activities. Respondent 3 noted such a scenario;

> *"After reporting the case to WRMA and the provincial heads it was unfortunate we still see the soil being dumped on the wetland. Now we feel demotivated. Even at the moment the soil is still being dumped and have changed the water course …Those to enforce are not doing their job. Enforcement is a real challenge. The WRUA has the constitution but it's meant to guide our internal operations. But we ourselves cannot prosecute*."

To be able to have a clear involvement or participation of the many actors each must have not only clear but distinct roles and responsibilities. However the empirical findings indicated overlap in some of the stakeholders or government bodies. That affected negatively the influence the community or more so stakeholders to effectively take part in the catchment activities.

4.4.3 The influence of coordination

According to the empirical findings, coordination of actors in the sub catchment seemed not clear if there was any coordinating body.

Absence of coordination meetings that are supposed to enhance dialogue and create integration lead to low involvement. Equally coordination meetings create confidence and the stakeholders could prevent conflicts and create lasting solution and engagement but this was lacking.

The coordination was found to enhance sharing and this enhances the flow of information in turn leading to integration and higher level of participation. On the other side absence of the coordination meetings or mechanisms can impact on the same. This was evidenced when WRMA coordinates funded activities, interaction and involvement and exchange of information is high and vice versa.

Chapter 5: Conclusions and recommendations

This chapter presents the final remarks regarding the research question, sub questions on empirical findings and the recommendations for further research.

5.1 Research Objective

The main purpose for this research was to explain the influence of institutional arrangement on participation of stakeholders in Lower Rupingazi WRUA, located in Tana catchment, Embu Kenya. Therefore the study described what is understood by institutional arrangements and stakeholders participation based on theoretical review. Further using the empirical data, current institutional arrangements in lower Rupingazi have been outlined. Equally the stakeholders and their functions have been described in relation to water resource management. Finally the researcher has explained the extent of institutional arrangement impact on stakeholder's participation.

5.2 What is understood by institutional arrangements and stakeholder's participation?

Institutional arrangements basically were reviewed and for the purpose of this research they refer to laws, rules and regulations that enable or facilitate decision making within an organization. Further they include the roles and responsibilities and coordination aspects (Bandaragoda, 2000, Jaspers, 2003, Saravanan, MacDonald, et al., 2009). On the other side stakeholder participation refer to involvement of an organization or individual who have a stake or bargaining power, are affected or affect a certain issue or activity or decision making necessitating collaboration. However this is not without including the marginalized in the management of the river system. The stakeholders being organization and individuals (government and non-governmental) who take part in the lower Rupingazi river basin management. That is, the Government, NGOs and WRUA representing different categories of consumptive and non-consumptive water users (Reed, 2008, Van Ast, Rosa, et al., 2005, Luyet, Schlaepfer, et al., 2012, Arnstein, 1969, Bandaragoda, 2000, Huitema, Mostert, et al., 2009, Rowe and Frewer, 2005, Jaspers, 2003).

5.3 What are the current institutional arrangements in lower Rupingazi river basin management?

Laws rules and regulation

Based on the interviews and secondary data available this research concludes that the management of the water is along the hydrological boundaries, of which lower Rupingazi is one of them, is based on the Water Act 2002. It is the guide upon which the WRUA is anchored and more so the power sharing between the government and the community is outlined. Equally the mechanism for implementing water resource management in Act is specified in WRM Rules 2007. The modalities of engagement and constraining are outlined. Moreover, Constitution of Kenya (COK) 2010 provides framework for all other legislations. Consequently, other multiple legislations that have implication on water resource management include; EMCA 2015, Kenya Forest Act 2009, Agriculture Act Cap 318, Land Act 2012, County government Act no 17, 2012, Agriculture (Farm forestry) rules 2009, wetlands, river banks, lake shores and sea shore management) regulations, 2009.

Roles and responsibilities

Notably, the above mentioned legislation contained clear mandate of each institution. Therefore it is within the legislations that the institutions drew their power over assigned

roles and responsibility and shelved them from engagement on what was not contained therein. The table below summarizes the legislations and the institutions that have been assigned the roles and responsibilities;

Figure 13: Summary of the legislations related to Water Resources Management

Level of government	Laws	Institution	Rules	Institution	Regulations	Institution
National	Constitution of Kenya (COK 2010)	Government	WRM Rules 2007	WRMA	Wetlands, river banks, lake shores and sea shore management) regulations, 2009	NEMA
	Water Act 2002	WRMA, WSTF,	Agriculture (Farm forestry) rules 2009	Agriculture		
	EMCA 2015	NEMA				
	Kenya Forest Act 2009	KFS				
	Agriculture Act Cap 318	Ministry of Agriculture				
	Land Act 2012	Ministry of lands				
County level	County government Act no 17, 2012	County Government				

Coordination

It was apparent that coordination of actors was not clear as outlined in the empirical findings and secondary data. WRMA is the lead agency in water resources. Through delegation of function to WRUA (WRM Rules 2007, Water Act 2007), it coordinates water resources management activities in the sub catchment. However in doing this, other intergovernmental bodies with mandates, goals and interests regarding catchment management come into play. Coordination of different legislation or actors is not stipulated in WRMA legislation and the interpretation of lead agency does not explicitly imply co-ordination. Consequently, NEMA is mandated to supervise all environmental related legislations. Equally it was not clear to most of the stakeholders if supervision meant coordination. More so they were in doubt on who really coordinates actors within the catchment. Therefore the coordination aspect appeared inexplicit and the mechanisms for coordination not adequate. This was found to complicate the enforcement efforts and integration of stakeholders and institutions both vertically and horizontally.

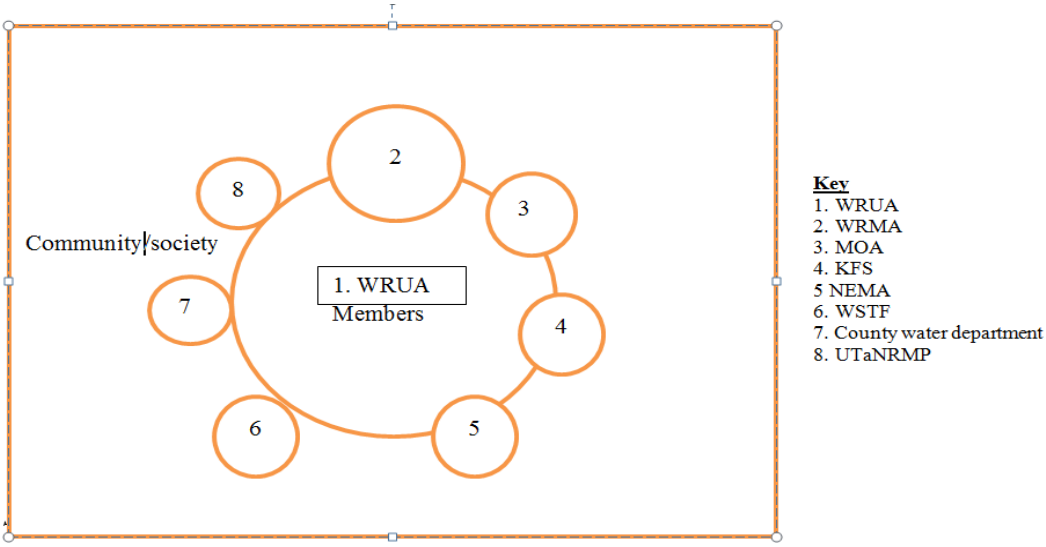
5.4 Which stakeholders are involved in lower Rupingazi river basin management and what are their functions?

The findings revealed there are known stakeholders as mentioned by the respondents. The Lower Rupingazi WRUA is an association of different category of representation of the community. The stakeholders within the WRUA are known through membership as a sign of commitment to take part in the water resources within the basin. They are categorised and comprise of Riparian members (people with land adjacent to the river or any other water body), individual abstractors, water projects and self-help groups. Further there are the Non-governmental organizations and the Governmental bodies and financing bodies that support the WRUA.

It is important to note that the list is not exhaustive given that the respondents mostly mentioned the people or individuals they have interacted with and they were open to further interaction. Given that the people or institutions will use water, NGOs could come to work in

the area, as well as self-help groups and others may register in future then stakeholders list could not be exhaustive.

Figure 14: Key stakeholders with functions related to water resources management in lower Rupingazi WRUA



Functions of the stakeholders

Based on findings and analysis of the stakeholders function, in relation to the river basin management as outlined in the analysis, can be broadly categorized into; participating in either 'actual doing', technical support in their respective mandate, financial support. It was noted that while WRMA does not provide funds it sometimes can when money is available and depending on the activity. Mostly all stakeholders participate in the 'actual doing'.

Function	**Institution**
Technical support to the WRUA	WRMA, KFS, MOA, NEMA, County Government,
Financing the WRUA	WSTF, UTaNRMP
Planning and actual implementation catchment activities	WRUA, WRMA, KFS, MOA,,NEMA, County Government, UTANRMP

However the study concludes that the functions of various inter-governmental departments are overlapping causing friction. Further mechanisms for solving the issues were not clear and this affected the implementation of activities. Unfortunately this is a threat to integration a core objective of Integrated Water Resources Management.

Table 9: Overlapping roles and responsibility in management of lower Rupingazi sub catchment

Roles and responsibility/mandates	WRMA	NEMA	MOA	County environment	KFS	Water department county
Riparian conservation	x	x	x			
Effluent discharge control permits/ licence	x	x				
Catchment management and conservation activities	x	x	x	x	x	
Permitting of water inside the forest.	x				x	
WRUA establishment	x					x

5.5 What current institutional arrangements influence stakeholder's participation in lower Rupingazi river basin management?

From the empirical findings institutional arrangement in this research looked at the legal framework, the roles and responsibility and coordination.

Legal framework

The findings indicated Water Act 2002 has influenced the organization of stakeholders. By providing for management of water through hydrological boundaries, the stakeholders to be involved and included are determined by utilization of particular resource. Also when water users acquire water right through a permit they are recognized as stakeholders and therefore required to become WRUA members to take part in the activities of catchment conservation. However the involvement is voluntary and this can either be positive influence if one joins or negative if one does not. It requires awareness creation and capacity building for people to make informed decisions. Moreover most of the respondent mentioned that the water users were more interested with visible quick gains. If this is not visible or guaranteed they are not motivated a challenge that comes with management of common property.

Equally the legal frameworks have encouraged collaboration because in a way they compel the individual institutions to take part and involve others (stakeholders) in decision making. Most of the legislation had a provision to engage relevant stakeholders in taking certain actions. Also they have encouraged inclusion of the marginalized and each stakeholder has to ensure their interests are accommodated. However it is evident that without enforcement the legal framework is as good as dead and may not influence participation. There are always elements out there that are ignorant of the law.

Further availability of mechanism to finance water resource management through WDC was found to enable most of the stakeholders to take part. The community stakeholders take part in meetings, forums, planning, and implementation of activities. On the other side government, Non-governmental and financial bodies provided technical and or financial support. However when no funds are available it meant less interactions. Therefore it can be concluded that financial resources play a critical role towards enabling involvement, inclusion and collaborating with stakeholders in water resources management.

Roles and responsibilities

Clarity of roles and responsibilities enhances participation because it reduces tension and friction among the people with stake. From this research, the respondent's findings indicate that when roles are clear and agreed upon better involvement and collaboration is encouraged. However formal agreements are better than verbal or no agreements at all. The MoU between WRMA and WRUA binds them towards meeting the set objectives and fulfil the obligations. This was more so because the legal framework entrenched the collaboration framework between the two unlike towards other intergovernmental bodies who did not have formal agreements.

Therefore it can be concluded that the relationship between WRUA with the other government stakeholders was mostly consultative when need arises and that between WRMA and WRUA is more of collaborative and cooperative relationship with clearly stipulated roles and responsibilities. However it was established that unclear roles can lead to misunderstanding and affected relationships although dialogue enabled them overcome the challenges. Moreover enforcement is equally affected.

Coordination

There is a gap in coordination due to lack of an overall coordinating body. Reporting was majorly vertical and not horizontal unless when requested by the other actors. Further absence of specific coordinating meetings to share information among them worsens the situation. In some cases this gap in coordination of activities, led to duplication of activities wastage of resources. Therefore rather than fostering integration it fosters segregation, the opposite of what IWRM is all about. Equally this complicates enforcement efforts.

5.6 Final conclusion of research question:

To what extent does the institutional arrangement influence the stakeholder's participation in the lower Rupingazi river basin system?

The legal framework provides for a platform through which the stakeholders can formally or legally be involved in the water resource management. This is enhanced through a power sharing mechanism between the government and the community by signing of MOU. However the absence of mechanisms for the intergovernmental implementation mechanisms and reporting structures is seen to impact negatively on participation and integration of stakeholders. Due to duplication of the mandates by the different government bodies the community loose credibility due to contradicting information that reaches them.

Although legal framework (Water Act 2002) has provided financial mechanism for the WRUAs like Lower Rupingazi it is inadequate and inconsistent compared to the planned budgets therefore greatly affecting implementation of activities. In turn this affects the morale of the peoples to take part. Surprisingly the financial availability greatly affected information exchange, awareness creation, collaboration and involvement of stakeholders. This is due to the less interaction that takes place between actors when no activities are being implemented.

Further overlap of roles and responsibility across intergovernmental bodies creates misunderstanding and tension over whom the community in general should listen to. This in turn discourages the water users from taking part. Equally lack of clarity over who coordinates and lack of clear mechanism was affecting integration.

Additionally most of the respondents from the WRUA came out strongly on the issue of willingness to volunteer, availability of incentives, information and awareness to have an impact on their participation. Moreover enforcement played a big role due to the repercussions that come with lack compliance.

Overall it is apparent that institutional arrangements related to lower Rupingazi basin are marred with inadequacies in terms of; weakness of mechanisms for coordination more so across the intergovernmental institutions, overlapping roles and responsibilities and misinterpretation of the legal documents. Although will power to enable participation of stakeholders in those legislations is noticeable, inadequate financing and enforcement impairs it. This indicates a weakness in fostering integration both vertically and horizontally. Therefore WRUA members find themselves at a cross road in implementation, reporting, collaborating with key stakeholders. This further destroys their confidence and morale to take part.

Lower Rupingazi is one of the rivers with urban characteristics. With devolvement of government, there is growth of the town and this means more water required. Equally there is potential of pollution from the town if proper care is not taken in addition to pollution from upstream users (mainly agriculture). From the analysis challenges in institutional arrangement were described. While efforts to work together were noted more needs to be done. This included WRMA advising Embu county government on drafting of water bill to

avoid overlaps and misinterpretation and advising on new dumping site for the town to avoid pollution getting to the river

Therefore for effective management of the urban river like lower Rupingazi a well thought of mechanism need to be established for WRMA (resource management) and the county (water resource and service) to work together. For instance, in integration of WRUA plans with those of the county plans, financing of WRUA, development of a reporting framework and coordination of the activities. Further a deliberate move for the county to be visible in actual implementation and integration with other intergovernmental bodies.

Notably, most of legislations are currently under review in Kenya to align to the constitution of Kenya (2010). This is an opportunity to correct the anomalies mentioned by the respondents, to bring clarity of legislation and roles and responsibilities. However awareness creation of the changes in the legal provisions to all stakeholders would be necessary.

5.7 Reflection on literature and research process

The hindsight into literature brings in mind the study by Franzen, Hammer, et al., (2014), that while there could be no clear links between institutional arrangements and participation, finance is one of the factors and the willingness to participate by the stakeholders themselves. The institutional arrangement have created platform for stakeholders participation through establishing WRUA like lower Rupingazi. The Level of engagement of WRUA by WRMA can be termed as active participation, cooperatively and collaboratively with other stakeholders. This is because they have a formal agreement, they develop plans and implement activities jointly and their decisions are encompassed in the government structure. Further financing mechanism is meant to enable implementation of IWRM but when inadequate there is low participation. Therefore the willingness is crucial.

Institutions provide incentives on one hand while they are restraint on the other meant to create stability as noted in the findings by Bandaragoda (2000). The case of lower Rupingazi WRUA portrays this scenario. It creates a platform for stakeholders to take part in their environment hence restrain them from doing harm while providing incentives through financing their planned activities. However this could be the reason why enforcement fails due to balancing the two. However enforcement of the law is crucial because regardless of the provisions of the legislations there will always be people out there who defy or ‘participate negatively’.

Finally reflecting on the research process, case study strategy was applied for this research. Using qualitative approach, in-depth interviews formed the main data collection method triangulated with secondary data. This enabled researcher to collect first-hand data based on respondents opinions and experiences on interactions with the river as well as with other actors. However the findings of this research are not generalizable because they reflect the context of lower Rupingazi river basin management (Yin, 2009).

5.8 Further research and recommendations

While this research focused more on the influence of the institutional arrangement on stakeholder’s participation, further research can explore actual impacts that the WRUA has made on the ground. Equally there is need for future research on sustainability of the projects and other technologies that could enhance water availability rather than rationing programmes.

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Annex 1: Interview guide

Interview guide

The listed below, is the semi-structured interview guide. The instrument will be used to collect in-depth data on *Institutional Arrangements and the influence on stakeholder's participation in management of the lower Rupingazi river basin system, Embu, Kenya.* It will be applied to the selected institutions. Focus group discussion guide will be administered to the WRUA members. It is strictly confidential and the responses will only be used for academic purposes.

Interview guide for Water Resources Management Authority (WRMA)

Organization functions

1. What is your core mandate in relation to river basin management? Are they clear?
2. Are there other institutions with similar roles in the river basin management?
3. Who are other actors that you consider relevant in management of lower Rupingazi river basin?

Coordination

4. Who coordinates different actors in management of Lower Rupingazi river basin? How is it done?
5. Which conflicts are encountered in dealing with other actors? How are they dealt with?
6. Who does your organization report to? Do you also report to another institution?

Involvement

7. How does the organization take part in the management of the river basin?
8. How often are you engaged in meetings in relation to management of the lower Rupingazi? What is discussed in the meetings?
9. What are your objectives or interests in management of the river basin? Are they considered in decision making?

Inclusiveness

10. Can you tell me how the participation of the marginalized is ensured in the river basin management?
11. How does communication with stakeholders take place in management of the river basin?
12. Which opportunities are provided for in law for stakeholder's participation in river basin management?

Collaboration

13. Can you tell me which agreements do you have with WRUA in the river basin management? Are they based on legal framework?
14. Which knowledge or awareness do you gain or provide regarding management of river system?
15. Which activities have you undertaken jointly with the WRUA at the river basin?

Legal framework

16. What are the current laws, rules or regulation that related to the river basin management? Are they clear on public and stakeholders participation?
17. Which are other available rules and regulation related in the river basin management?
18. How is financial and technical support provided for in law in support of WRUA?
19. What would you say about involvement of public and stakeholders before the Water Act 2002?
20. In your own opinion how do the current laws, rules and regulation in the lower Rupingazi river system affect participation of stakeholders in water management?

Interview guide

The listed below, is the semi-structured interview guide. The instrument will be used to collect in-depth data on *Institutional Arrangements and the influence on stakeholder's participation in management of the lower Rupingazi river basin system, Embu, Kenya.* It will be applied to the selected institutions. Focus group discussion guide will be administered to the WRUA members. It is strictly confidential and the responses will only be used for academic purposes.

Interview guide for National Environment Management Authority (NEMA)

Organization functions

1. What are your roles and responsibilities in relation to river basin management? Are they clear?
2. In your opinion are there other institutions with similar roles?
3. In your opinion who are other actors that you consider relevant in management of lower Rupingazi river basin system?

Coordination

4. Who coordinates different actors in river basin management? How?
5. In your opinion which conflicts are encountered in dealing with other actors? How are they dealt with?
6. Who does your organization report to? Does the Lower Rupingazi WRUA report to you?

Involvement

7. How are you involved in the management of the river basin?
8. How often are you engaged in meetings in relation to management of the lower Rupingazi? Agenda?
9. What are your objectives or interests related to management of the river basin? Are they considered in decision making in the river basin management by WRUA?

Inclusiveness

10. Can you tell me how the marginalized group's interests are included in management of the river basin?

11. In your opinion how does communication take place between actors regarding management of the river basin?
12. Which opportunities or avenues are available for you to be included in the management of river basin?

Collaboration

13. Can you tell me which agreements you have with the WRUA in relation to the river basin management?
14. Which knowledge or awareness do you gain or provide regarding management of river system?
15. Which activities have you undertaken jointly with the WRUA?

Legal framework

16. What are the current laws, rules or regulation in the river basin management? Are they clear on stakeholder's participation?
17. In your opinion are there other available rules and regulation related to river basin management?
18. How is the financial and technical support provided for in law?
19. In your own opinion what would you say about involvement of public and stakeholders before the Water Act 2002?
20. In your own opinion how do the current laws, rules and regulation in the lower Rupingazi river system affect participation of stakeholders in water management?

Interview guide

The listed below, is the semi-structured interview guide. The instrument will be used to collect in-depth data on Institutional Arrangements and the influence on stakeholder's participation in management of the lower Rupingazi river basin system, Embu, Kenya. It will be applied to the selected institutions. Focus group discussion guide will be administered to the WRUA members. It is strictly confidential and the responses will only be used for academic purposes.

Interview guide for Ministry of Agriculture, livestock and fisheries

Organization functions

1. What are your roles in relation to river basin management? Are they clear?
2. Which other institutions have similar roles?
3. Who are other actors that you consider relevant in management of lower Rupingazi river basin system

Coordination

4. Who coordinates different actors in water resource management in the lower Rupingazi system? How is it done?
5. Please tell me which conflicts are encountered in dealing with other actors? How are they dealt with?
6. Whom does your organization report to? Does the WRUA report to you?

Involvement

7. How are you involved in the management of the water in river basin?
8. How often are you engaged in meetings in relation to management of the lower Rupingazi? What is discussed in the meetings?
9. What are your objectives or interests related to management of the river basin? Are they considered in decision making?

Inclusiveness

10. Can you tell me how the marginalized groups' interests are included in management of the river basin?
11. How does communication take place between actors regarding management of the river basin?
12. Which opportunities are available that enables your participation in the management of river basin?

Collaboration

13. Which agreements do you have with WRUA in the river basin management?
14. Which knowledge or awareness information do you gain regarding management of river system?
15. Which activities have you undertaken jointly with the WRUA?

Legal framework

16. Which are the current laws, rules or regulation in the river basin management? Are they clear on stakeholder's participation?
17. Which other available rules and regulation are related to river basin management?
18. How is the financial and technical support provided for in law?
19. In your own opinion what would you say about involvement of public and stakeholders before the Water Act 2002?
20. In your opinion how do the current laws, rules and regulation in the lower Rupingazi river system affect participation of stakeholders in water management?

Interview guide

The listed below, is the semi-structured interview guide. The instrument will be used to collect in-depth data on Institutional Arrangements and the influence on stakeholder's participation in management of the lower Rupingazi river basin system, Embu, Kenya. It will be applied to the selected institutions. Focus group discussion guide will be administered to the WRUA members. It is strictly confidential and the responses will only be used for academic purposes.

Interview guide for department of Water at the County

Organization functions

1. What are your core functions in relation to river basin management? Are they clear?
2. Are there other institutions with similar roles?

3. Who are other actors that you consider relevant in management river basin?

Coordination

4. Who coordinates different actors in water resource management in the Rupingazi system
5. Have you encountered conflicts in dealing with other actors? How are they dealt with?
6. Who does your organization report to? Does the WRUA report to you?

Involvement

7. Can you describe how you are involved in river basin management?
8. How often are you engaged in meetings in relation to management of the lower Rupingazi
9. What are your objectives or interests related to management of the river basin? Are they considered in decision making?

Inclusiveness

10. Can you tell me how marginalized groups interests are included in management of the river?
11. How does communication take place between actors regarding management of the river basin?
12. Which opportunities are available for stakeholders to be included in the river basin management?

Collaboration

13. Which agreements do you have with WRUA in the river basin management?
14. Which knowledge or awareness do you gain or provide regarding management of river system?
15. Which activities have you undertaken jointly with the WRUA?

Legal framework

16. What are the current laws, rules or regulation and organization in the river basin management? Are they clear on stakeholder's participation?
17. Which other available rules and regulation are there in river basin management?
18. How is the financial and technical support to the WRUA provided for in law?
19. What would you say about involvement of public and stakeholders before the Water Act 2002?
20. In your opinion how do the current laws, rules and regulation in the lower Rupingazi river system affect participation of stakeholders in water management?

Interview guide

The listed below, is the semi-structured interview guide. The instrument will be used to collect in-depth data on *Institutional Arrangements and the influence on stakeholder's participation in management of the lower Rupingazi river basin system, Embu, Kenya.* It will

be applied to the selected institutions. Focus group discussion guide will be administered to the WRUA members. It is strictly confidential and the responses will only be used for academic purposes.

Kenya Forest Service (KFS).

Organization functions

1. What are your roles and responsibilities related to river basin management? Are they clear?
2. Which other institutions have similar roles?
3. Who are other actors that you consider relevant in river basin management?

Coordination

4. Who coordinates different actors in water resource management in the Rupingazi system?
5. Please tell me which conflicts are encountered in dealing with other actors? How are they dealt with?
6. To whom is your department accountable to? Does the WRUA report to you?

Involvement

7. How are you involved in the management of the water in river basin?
8. How often are you engaged in meetings in relation to management of the lower Rupingazi?
9. What are your objectives or interests related to management of the river basin? Are they considered in decision making?

Inclusiveness

10. Can you tell me how marginalized groups interests are included in management of the river basin management?
11. How does communication take place between actors regarding management of the river basin?
12. Which opportunities are available that allows you to be included in the management of river basin?

Collaboration

13. Which agreements do you have with WRUA in the river basin management?
14. Which knowledge or awareness do you gain or provide regarding management of river system?
15. Which activities have you undertaken jointly with the WRUA?

Legal framework

16. Can you please describe the current laws, rules or regulation and organization in the river basin management? Are they clear on stakeholder's participation?
17. Which other available rules and regulation in the river basin management?
18. How is the financial and technical support provided for in law?

19. In your own opinion what would you say about involvement of public and stakeholders before the Water Act 2002?
20. In your own opinion how do the current laws, rules and regulation in the lower Rupingazi river system affect participation of stakeholders in water management?

Interview guide

The listed below, is the semi-structured interview guide. The instrument will be used to collect in-depth data on *Institutional Arrangements and the influence on stakeholder's participation in management of the lower Rupingazi river basin system, Embu, Kenya.* It will be applied to the selected institutions. Focus group discussion guide will be administered to the WRUA members. It is strictly confidential and the responses will only be used for academic purposes.

Interview guide for Upper Tana Natural Resources Management Project (UTaNRMP)

Organization functions

1. What are your roles and responsibilities related to river basin management? Are your roles clear?
2. Are there other institutions with similar roles?
3. Who are other actors relevant in management of lower Rupingazi river basin system?

Coordination

4. Who coordinates different actors in water resource management in the Rupingazi system
5. Please tell me which conflicts are encountered in dealing with other actors? How are they dealt with?

Involvement

6. How are you involved in the management of the water in river basin?
7. How often are you engaged in meetings in relation to management of the lower Rupingazi?
8. What are your objectives or interests related to management of the river basin? Are they considered in decision making?

Inclusiveness

9. Can you tell me about marginalized groups interests in management of the river basin?
10. How does communication take place between actors regarding management of the river basin?
11. Which opportunities are available for you to be included in the management of river basin?

Collaboration

12. Which agreements do you have with WRUA in the river basin management?
13. Which knowledge or awareness information do you gain regarding management of river system?

14. Which activities have you undertaken jointly with the WRUA?

Legal framework

15. Which are the current laws, rules or regulation and organization in the river basin management? Are they clear on stakeholder's participation?
16. Which other available rules and regulation are there related to river basin management?
17. How is the financial and technical support provided for in law?
18. In your own opinion what would you say about involvement of public and stakeholders before the water Act 2002?
19. In your opinion how do the current laws, rules and regulation in the lower Rupingazi river system affect participation of stakeholders in water management?

Interview guide

The listed below, is the semi-structured interview guide. The instrument will be used to collect in-depth data on *Institutional Arrangements and the influence on stakeholder's participation in management of the lower Rupingazi river basin system, Embu, Kenya.* It will be applied to the selected institutions. Focus group discussion guide will be administered to the WRUA members. It is strictly confidential and the responses will only be used for academic purposes.

Interview guide for Water Resources Users Association (WRUA)

Organization functions

1. Please describe the organization of your association?
2. What are your roles provided for within the law, rules and regulations in river basin management?
3. Are there other institutions with similar roles?
4. Which actors do you work with in this river basin management?

Coordination

1. Who coordinates different actors in water resource management in the Rupingazi system?
2. Do you encounter conflicts in dealing with other actors? How are they dealt with?
3. Who does your organization report to? How often? Is this clearly supported by law?
4. Participation in river basin management

Involvement

5. How are you involved in the management of this river basin? Meetings? Do you feel satisfied?
6. How often are you engaged in meetings in relation to management of the lower Rupingazi?
7. What are your objectives or interests in river basin management? Are they considered in decision making?

Inclusiveness

8. How are marginalized groups interests included in management of the river?
9. How do you communicate with the public and other stakeholders? How often?
10. Which opportunities are provided for in law for you to be included in river basin management?

Collaboration

11. Which agreements do you have in the river basin management?
12. Which knowledge or awareness do you gain or provide regarding management of river system?
13. Which activities have you undertaken jointly with other actors?

Legal framework

14. What are the current laws, rules or regulation and organization in the river basin management? Are they clear?
15. Which other available rules and regulation are there those govern the river basin management?
16. How is the financial and technical support provided for in law?
17. What would you say about involvement of public and stakeholders before the water act 2002?
18. In your opinion how do the current laws, rules and regulation in the lower Rupingazi river system affect participation of stakeholders in water management?

Interview guide

The listed below, is the semi-structured interview guide. The instrument will be used to collect in-depth data on *Institutional Arrangements and the influence on stakeholder's participation in management of the lower Rupingazi river basin system, Embu, Kenya.* It will be applied to the selected institutions. Focus group discussion guide will be administered to the WRUA members. It is strictly confidential and the responses will only be used for academic purposes.

Focus Group Discussion (FGD): WRUA members.

1. What are your roles in the management of this river basin?
2. In your opinion how are the marginalized groups treated in the river basin management currently?
3. In your opinion who coordinates different actors in this river basin?
4. To whom is the WRUA accountable to and why?
5. In your opinion who are the actors that are actively involved in the river basin management?
6. Which knowledge or awareness do you gain or provide regarding management of river system?
7. Do you encounter conflicts and how do you resolve them? Is it provided for in law?

8. How do the leaders communicate to you and other stakeholders on issues regarding the river basin management?
9. How are activities of river basin funded?
10. Which activities have you undertaken with participation of other actors in the river basin management?
11. Which are the current laws, rules or regulation and organization in the river basin management? Are they clear on stakeholder's participation?
12. What would you say about involvement of public and stakeholders before the water Act 2002 in comparison with now?
13. In your opinion how do the current laws, rules and regulation in the lower Rupingazi river system affect participation of stakeholders in water management?

Interview guide

The listed below, is the semi-structured interview guide. The instrument will be used to collect in-depth data on *Institutional Arrangements and the influence on stakeholder's participation in management of the lower Rupingazi river basin system, Embu, Kenya.* It will be applied to the selected institutions. Focus group discussion guide will be administered to the WRUA members. It is strictly confidential and the responses will only be used for academic purposes.

Interview guide for Non WRUA members

1. Have you taken part in the river basin management related activities and how?
2. In your opinion who coordinates the management of the lower Rupingazi river system and why?
3. In your opinion who are the actors involved in management of the river basin management?
4. How do you relate with other water users in the WRUA?
5. Have you experienced conflicts related to water use? How was it dealt with?
6. How do you receive information related to river basin management?
7. What would you say about involvement of public and stakeholders in water resource management?
8. In your opinion which are the current laws and regulations that govern the river basin management?
9. Can you tell me how these laws and regulations affect you as a water user?

Annex 2: Code list for data

Code-Filter: All

HU: thesis project new
File: [D:\erasmus university details\RMT 3 data analysis and Programme\Thesis analysis\thesis project new.hpr7]
Edited by: Super
Date/Time: 2016-08-07 16:36:35

Activities of stakeholders
Agreements
Changes and impacts
Clarity of stakeholder's role
Co-ordination
Communication
Conflicts
Conflicts management
Existing Laws, rules and regulations
Financing capacity and support
Historical background
Influence
Joint activities by stakeholders
Knowledge and Information sharing
Meetings and forums
Objectives and interest
Opportunity for inclusion
Organization
Reporting structure
Role of stakeholders
Special group's interests
Stakeholder's joint participation
Stakeholders list
Technical support

Annex 3: IHS copyright form

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