RIVER RESTORATION IN NAIROBI, KENYA:
EXPLORING PUBLIC PARTICIPATION AND LEARNING OUTCOMES

BY

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Abstract

River restoration projects aim to address issues arising from river degradation. Through selecting two river restoration cases in Nairobi, the purpose of this research was to examine the public participation and social learning needs and outcomes of such undertakings. Following a qualitative approach, data were gathered through document reviews, river walks, 35 semi-structured interviews and a workshop. Data from both cases showed strong public support for restoration due to expected ecological and scenic improvements. Findings also revealed public participation process strengths, such as the inclusion of community groups and communication of project information. Cognitive enhancement including increased knowledge on recycling, waste management and the benefit of river restoration. However, opportunities for individual and group learning outcomes in the Nairobi River Basin Rehabilitation and Restoration Program were limited, mostly due to the poor quality of consultations undertaken, lack of access to information and limited public involvement in planning.
Acknowledgements

I look back to the commencement of my M.N.R.M. program with deep gratitude to the Almighty God who saw me through my course work, thesis proposal, field trip and the successful completion of my project. To my parents, Mr. Olusegun Sikaiye and Mrs. Temitope Sikaiye, thank you for believing in me, the morals and values instilled in me have guided my path. Mum, thank you especially for continuously encouraging me through this journey, your words of encouragement were a light in dark times.

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<td>AWSB</td>
<td>Athi Water Service Board</td>
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<tr>
<td>Baraza</td>
<td>Swahili name connoting public meetings and gatherings</td>
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<tr>
<td>CBD</td>
<td>Central Business District</td>
<td></td>
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<tr>
<td>CBO</td>
<td>Community-Based Organization</td>
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<td>EU</td>
<td>European Union</td>
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<td>FOCP</td>
<td>Friends of City Park</td>
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<td>GOK</td>
<td>Government of Kenya</td>
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<td>KRP</td>
<td>Kibagare River Restoration Project</td>
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<td>MWI</td>
<td>Ministry of Water and Irrigation</td>
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CHAPTER ONE – INTRODUCTION

1.1 Introduction

River restoration is a management strategy used to address the problems arising from the degradation and misuse of freshwater resources (Giller, 2005; Woolsey et al., 2007). Freshwater resources provide essential services for human activities. Modification of rivers, lakes, and wetlands have sustained and facilitated economic development for years (Pander and Geist, 2013). However, these anthropogenic activities increase pressures on freshwater ecosystems, causing the depletion and degradation of riverine resources (Mueller et al., 2014).

Development activities can have negative impacts on freshwater ecosystems in developing countries as related impacts are further magnified by high population, poor waste management activities and weak regulations and policies (Alam, 2013). In many developing countries, sewage systems are, for example, either nonexistent or nonfunctioning (Ndritu et al., 2003). Regulations for managing and enforcing proper waste management practices are also often lacking. This is revealed in many places in Asia and Africa, including the Nairobi River basin in Kenya (Alam 2013; Ndritu et al., 2003). The combined effects of poor waste management, poor sanitation, water pollution, poverty, population growth and weak regulations increase river degradation in developing countries (Bowonder, 1987; Alam 2013); hence, the magnitude of river management issues in these countries differs from those of developed countries (Alam 2013).

The Nairobi River flows through Kenya’s capital city and suffers from pollution due to problems such as the accumulation of uncollected garbage, inputs of human waste from informal settlements, industrial waste and agricultural waste, to mention a few sources of pollution (Kithia 2012a; Kithiia 2012b; Ongwenyi 1997). Studies on various Nairobi River tributaries have found evidence of high levels of biological and chemical oxygen demand, heavy metals, poor water quality and
excess pollution (Kithia 2012a; Mutisha and Tole 2010). This increased pollution has resulted in the loss of aquatic life, decreased biodiversity, loss of livelihoods, the spread of water-borne disease, reduced economic value and loss of the natural beauty of the river basin (Kithia 2012b).

River restoration projects aim at maintaining ecosystem services and improving the quality of biodiversity (Palmer et al., 2005). Healthily functioning rivers improve the quality of human life (Constanza et al., 2002). River ecosystems deliver provisional services as they serve irrigation, drinking, agricultural, transportation and even domestic purposes (Alan et al., 2016). River ecosystems also provide supporting and cultural services through nutrient recycling and recreation (Alan et al., 2016), and contain about 10% of the world’s biodiversity (Mueller et al., 2014). As noted above, rivers are also prone to degradation and misuse by people (Pander and Geist, 2013). Given their benefits and misuse, it has become a priority for policymakers, scientists and environmental managers in many countries to ensure the preservation, rehabilitation and restoration of river ecosystems (Thorp et al., 2010).

River rehabilitation and restoration projects depend on ecological, social, and scientific factors to be successful (Verdonschot et al., 2009), and the most effective restoration projects should combine ecological, stakeholder and learning success (Palmer et al., 2005). Ecological and stakeholder success means that restoration projects achieve ecological improvement and satisfy stakeholder’s needs (Palmer et al., 2005). Learning success reflects the knowledge and experience gained by all parties involved in the restoration project, and can contribute to improved management practices that aid policy decisions and river management (Palmer et al., 2005; Palmer et al., 1997).
The rehabilitation of riverine environments through restoration involves a holistic, interdisciplinary approach, integrating social and scientific measures to promote the conservation of river ecosystems (Palmer et al., 2005) and drawing knowledge from several disciplines, such as hydrology, geomorphology, and ecology (Thoms and Parson 2002). Wohl et al., (2005) suggest, however, that because river degradation is a social process induced by human activities, river restoration should not be viewed through a scientific lens only. Human and social interactions must also be considered when developing a restoration approach. Scientific measures that directly influence river flow should be combined with passive measures that encourage change in human attitude, for example (Speed et al., 2016; Dienno and Thompson 2013).

Public support and engagement in river restoration projects is also critical for ensuring successful planning, implementation and long-term viability (Alam 2013). As such, it is important to gain public consensus on specific goals and themes of river restoration projects early in their development (Lee and Choi 2012). Among the indicators of successful restoration projects are project acceptance by the public and public satisfaction with participation opportunities (Woolsey et al., 2007). Even though public awareness of river degradation has increased globally, mere awareness has not proven to be enough to solve these issues (Woolsey et al., 2007). Active and ongoing public participation is vital to the success and long-term sustainability of restoration projects.

The Government of Kenya (GOK), in partnership with the private sector and civil society, initiated the Nairobi River Basin Rehabilitation and Restoration Program (NRBP) that consists of ten strategies aimed at ensuring the restoration and ongoing sustainable management of Nairobi Rivers and a clean Nairobi city (NRBP leaflet). The GOK indicates that partnerships created with civil society and the resulting potential for activities that engage people and encourage them to carry on
activities aimed at sustainability, such as waste reduction, and then share their learning and actions with others are central to the success of the program (NRBP leaflet 2009; Ndritu et al., 2003). They indicate further that the program cannot be successful without actively involving the public because they play a role in reducing the anthropogenic causes of pollution. It is thus necessary to have community sensitization and active participation in such government policies or programs.

1.2 Research Purpose and Objectives

The purpose of my research was to examine the public participation and social learning needs and outcomes of the NRBP. The objectives that I used to implement the research were:

- Identifying the stakeholders that are playing or could play a role in the rehabilitation program;
- Exploring the mechanisms used for participation and partnering with civil society as part of the rehabilitation program;
- Investigating the contributions, the public has made to program design and implementation;
- Determining social learning approaches and outcomes essential to the success of the cleanup and how this learning was facilitated; and,
- Considering the success of the restoration project from the perspective of the individuals involved.

1.3 Methods

The research followed a qualitative approach, using a case study strategy of inquiry (Creswell, 2007). Using this approach, I selected two cases: the NRBP mentioned earlier, and the Kibagare River Restoration Project (KRP) that was led by the Friends of City Park (FOCP). To guide my
case selection, I was looking for elements of previous or ongoing restoration activities and active community participation with opportunities for social learning. I then researched potential cases meeting my criteria through document review, active engagement and community visits.

To gather data to address my objectives, I used a combination of data collection methods, including document review, participant observation, river walks, semi-structured interviews and a workshop. Documents reviewed helped me to identify key partners and stakeholders and learn about project implementation and the progress of the river restoration initiatives. The FOCP also provided their meeting minutes, workshop participant lists, research results, news reports and stakeholders list. I also engaged in participant observation and three river walks during the first few weeks in the field to help me create rapport, familiarize myself with the community and rivers that are part of the basin and to verify information gathered through document review. Observations were recorded as jottings, sketches and field notes.

Using a set of predetermined questions, a total of 35 semi-structured interviews were conducted while I was in the field: eight interviews with NRBP partners, nine with KRP partners and 18 with individuals involved in some way in the restoration projects, including members of the water resources user’s association and park users. A workshop was conducted at the end of the research to discuss some key themes identified during the interviews. The workshop, which lasted just over two hours, was held at the Bowling Green Alley within City Park. A total of 10 participants, which were a subset of interview participants, attended the workshop. The data and information collected was analyzed and interpreted using QSR Nvivo (Walsh, 2003), a qualitative data-analysis software package. The methods are described in detail in chapter three.
1.4 Research Significance and Contributions

This research contributes to the understanding of community participation in the management of natural resources, specifically river rehabilitation and restoration in a developing country context. I was able to show linkages between community participation and learning processes and to add to the literature in this regard, particularly in relation to linking learning and action. I hope the outcomes of this research will aid policy decisions, such as those related to meaningful participation that encourages learning. I hope my research findings will also be useful for the rehabilitation of other tributaries of the Nairobi River system.

This research is also significant because, while river restoration projects have been undertaken in nations all over the world, most examples come from the US and Europe. Little research about this has been undertaken in the developing country context, and my research contributes to this limited literature. Also, by exploring the governance mechanisms for restoration that contribute to its success, I hope that communities can build capacity in regards to these processes and contribute more productively to river restoration planning in Kenya and beyond.

1.5 Organization of Thesis

This thesis is organized into seven chapters, including this introductory chapter. The second chapter consists of a literature review of important works pertaining to river restoration, public engagement and learning. The third chapter describes the worldview, research design and methods that were used for data collection and my approach to data analysis. Chapter four presents a detailed description of both cases, including project descriptions, implementation, perceptions of success and motivations. Chapter five includes discussions and reflections on public participation, and chapter six provides insight into the social learning opportunities and outcomes. The final chapter provides my conclusions and recommendations.
CHAPTER TWO – RIVER RESTORATION, PUBLIC PARTICIPATION AND LEARNING

2.1 Introduction

River rehabilitation and restoration are often used interchangeably; however, they do have different meanings. River rehabilitation is simply the repair of degraded river ecosystems (Simsek, 2012; De Waal et al., 1998). River restoration is the process of returning degraded and human-impacted rivers to a near natural state through hydrological, morphological and geological measures (Muhar et al., 1995; Woolsey et al., 2007). Wohl et al., (2005 p.2) define ecological river restoration as “assisting the recovery of ecological integrity in a degraded watershed system by reestablishing the processes necessary to support the natural ecosystem within a watershed”. While river rehabilitation focuses on the repair of degraded rivers alone (Simsek 2012), river restoration focuses on the repair, recovery and restoration of degraded rivers. River restoration is carried out through rehabilitation, recovery and restoration processes.

River restoration projects:

describe a series of measures (buffer strips, revegetation, horseshoe wetlands, side-slope reduction, meander valley, riffle-pools, riparian wetlands/swamp forest, ponds) designed ‘to decrease the transport of nutrients to surface waters' on one hand and 'to restore the animal and plant life along and within the stream channels' on the other (Muhar et al., 1995 p. 184; Petersen et al., 1992).

Human activities, such as the discharge of waste from industries, homes and agricultural farm lands, to mention a few, continue to increase pollution and nutrient levels in river ecosystems (Mueller et al., 2014; Alam, 2013). River restoration projects involve the implementation of a variety of processes, such as bank stabilization, creation of meanders and buffers, channel reconfiguration, floodplain reconnection and in-stream habitat improvement (Bernhardt et al., 2005; Wohl et al., 2005; Harrison et al., 2004), with the aim of rehabilitating and restoring degraded rivers to a healthy and functioning state (Muhar et al., 1995).
River restoration is carried out to enhance the ecological values and biodiversity of river ecosystems by maintaining or increasing their carrying capacity, while also improving the aesthetic values of river ecosystems (Tunstall et al., 2000). The biodiversity of river ecosystems strongly depends on their carrying capacity and ability to sustain life (Dou et al., 2015). Highly degraded rivers do not have this ability as they suffer from excess pollution, nutrients, debris and other factors that reduce biodiversity and ecosystem services. River restoration seeks to maintain or increase ecosystem services while improving the natural functioning of the river and entire riverine landscape (Pedroli et al., 2002; Palmer et al., 2005).

River restoration can be done naturally when we allow natural forces to reshape or reinstate the river to its natural form (Giller, 2005), or by using hydrological, morphological and geological measures to initiate the process (Muhar et al., 1995). Natural restoration measures are often passive with little or no measures applied. This allows natural hydraulic forces to reshape the river (Harrison et al., 2004). Although little or no measures are applied, it is expected that all sources of pollution are completely eradicated, thereby leaving the river to naturally reinstate itself. Passive restoration approaches focus on measures that target the sources of river degradation or aim to influence human behavior (Speed et al., 2016). Behavioral change is required in reducing several anthropogenic factors increasing river pollution (Dienno and Thompson, 2013). Both of these passive processes are very slow and occur over a very long period of time. For an active and rapid process, specific measures are applied to modify channels and structures, remove pollution sources and so on (Harrison et al., 2004). Today, most river restoration projects apply a combination of both passive and active measures to reshape or reinstate the river.
2.1.1 Drivers and Motivations of River Restoration

Common drivers and motivations for river restoration include: 1) legislations and policies (Smith et al., 2016); 2) ecological considerations in terms of the ecosystem services provided by rivers and increasing awareness of aquatic biodiversity (Wohl et al., 2005; Jahning et al., 2011; Smith et al., 2016; Feld et al., 2011); 3) the socioeconomic benefits associated with ecosystem restoration (Smith et al., 2014); and, 4) public demand for cleaner rivers and environments (Smith et al., 2016; Feld et al., 2011).

One of the major drivers for restoration projects is legislation and policies put in place to implement them (Smith et al., 2016). Several international, local and place-based policies and conservation goals drive river restoration worldwide (Baker et al., 2014; Bernhardt et al., 2005). The Aichi Target 15, in particular, states that:

> By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 percent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification (Baker et al., 2014, p. 513).

The need to maintain and restore ecosystems is also mentioned in the European Union (EU) Biodiversity Strategy Target 2, which states that “by 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems” (Baker et al., 2014, p. 513). In Europe, for example, the European Commission Directives or national legislation and policies have led to an actual demand for river restoration projects (Smith et al., 2016; Moss, 2007). Directives such as the European Union Water Framework Directive, the Catchment Flood Management Plans and EU 2020 Biodiversity Plan address water quality and flooding and support river restoration (Maes et al., 2013; Moss, 2007). Increasing awareness of ecosystem services, biodiversity and conservation has also increased the demand to rehabilitate and restore river ecosystems (Wohl et al., 2005; Jahning et al., 2011; Feld et
Socioeconomic benefits derived from river restoration, such as increased property value, revenue generation, flood control and human well-being, to mention a few, have motivated several countries to implement river restoration projects (Vermaat et al., 2016; Smith et al., 2014). Although funds spent on restoration projects are large, studies have shown that the socioeconomic benefits outweigh the cost (Bullock et al., 2011).

Public dissatisfaction with the ambiance of the environment along polluted rivers and hence their desire for cleaner rivers has increased the demand and motivation for river restoration projects (Dienno and Thompson 2013). Alam (2003), for example, especially noted the public demand for the cleanup of the Buriganga River, Bangladesh, as a motivating factor of the river cleanup program.

2.1.2 Global River Restoration Initiatives

River degradation is a global issue (Wohl et al., 2005; Woolsey et al., 2007; Lave, 2016; Thorp et al., 2010), but the need to conserve, rehabilitate and restore river resources is often local (Kraemer et al., 2001). As such, river restoration is widely practiced in many parts of the world, including Europe, US, UK, New Zealand, Australia, East Asia and Kenya (Lave, 2016).

Various efforts have been made to restore river systems since the 1990s, particularly in the UK, Europe, and US (Lee and Choi, 2011). River restoration in the UK was first carried out on the biologically dead River Thames in 1991, using a floodplain mosaic technique incorporating reed beds, wader scrapes and undulating wet grassland features (RRC, 2013). This project, which cost £112,000, was established to restore habitats for fish species, breeding waders and wildfowl, and to create a natural floodplain landscape (RRC, 2013). Today, the River Thames thrives successfully with increasing fish species and biodiversity (Griffiths et al., 2011). With 70 km of
the river restored, this success won the International Theiss River Prize granted by the International River Symposium in 2010 (BBC news, 2010). The UK government went further to secure £1 million from the EU’s LIFE Programme in 1991 to restore the Cole and Skerne rivers (Prior, 2016), and restoration initiatives started on these rivers in 1996 and 1997, respectively (RRC, 2013). Since then the UK government has engaged in restoration initiatives on 34 rivers between 1991 and 2012 (RRC, 2013).

Several restoration projects have been carried out in Europe as well; in 1998 the Dutch government established the 20-year Rhine Action Plan (Rhine 2020) as a means of controlling flooding and restoring the highly degraded Rhine River (Raith, 1999). The primary goal of this project was to improve water quality through landscape planning and pollution control (Raith, 1999). Today, much progress has been seen, particularly in the return of salmon (Grift, 2001). In 2013, the Rhine won the first European river prize and went on in 2014 to win the most prestigious award for river restoration, the International Theiss River Prize, in recognition of its excellent improvement and recovery (Theiss, 2014). Further work is being carried out to continue the action plan until 2020.

Within the Canadian context, the Cowichan River Restoration Project is an example of a river restoration project (CHRS, 2017). This project had many positive impacts on the community, so much so that the members of the Cowichan River Project team were awarded the CHRS National River Conservation Award of Merit in 2009 (CHRS, 2017). The 47 km Cowichan River in British Columbia sustains many fish species and community members, but was greatly impacted by high population growth within the region, invasive species and climate change resulting in low river flows (Curran and Mascher, 2016; Cowichan Monitoring Report, 2013). Since its recognition as a Canadian Heritage River in 1997, several efforts were made to restore and rehabilitate the river ecosystem via building a fish counting fence, river cleanup, diverting one km of the Cowichan
River and gravel removal measures (Cowichan Monitoring Report, 2013). The project was completed in 2006, and improvement in water quality, aquatic life and recreational use has been documented (Cowichan Monitoring Report, 2013; CHRS, 2017).

Although river restoration is a very popular concept in North America, Asia and Europe, it is still a relatively new idea in Africa. Only recently have some African countries-initiated river restoration policies. The Kouga River flowing through Eastern Cape Province of South Africa is one of the examples of recent river restoration efforts. As with many other sub-Saharan rivers, the Kouga River is under great threat from invasive species. This has led to the classification of more than half freshwater ecosystems in this region to be classified as endangered (ICD, 2017; WWF, 2017). The World Wildlife Fund (WWF), in collaboration with indigenous communities, initiated the Kouga River rehabilitation project in 2007 to improve water quality and restore natural habitat and biodiversity, and is currently working towards restoring the ecological integrity of the river (WWF, 2017). Another recent ongoing river restoration project in Africa is the Mlalakau River restoration project in Tanzania. This project was launched in 2013 with the aim of cleaning up the highly polluted Mlalakau River and enhancing its natural functionality (IWASP, 2017). This project targets solid waste removal, as this the primary source of pollution, and has resulted in river bank stabilization (IWASP, 2017).

Government agencies around the world have been given the responsibility of protecting and rehabilitating rivers; for example, the US Environmental Protection Agency has set up several restoration projects across the US (Lee and Choi, 2011). In France, the French National Agency for Water and Aquatic Environments and water agencies have developed actions for river restoration initiatives to ensure the conservation of river ecosystems (Morandi et al., 2014). The
GOK has also decided to contribute to river and environmental management by establishing the NRBP, which promises to bring great success and results in the future.

2.2 River Restoration Planning and Design

Palmer et al. (2005) proposed four critical considerations in river restoration planning: 1) river restoration projects should be designed through an ecological lens and must improve the ecological conditions of river systems; 2) restoration projects should promote self-sustaining river systems that require minimal follow-up thereafter; 3) restoration project implementation processes should in no way cause further damage to the ecosystem; and, 4) the public must be informed and involved in restoration project planning and activities. It is important to carefully plan restoration projects, because it provides a form of accountability and ensures project effectiveness (Lovett and Edgar, 2002). Effective planning helps establish clear and achievable goals and sets up mechanisms that ensures the success of the restoration project (Beechie et al., 2010; Lovett and Edgar, 2002).

Planning and designing restoration projects involve a series of steps, which include: identifying project objectives and goals, forming a collaborative team, designing an appropriate framework and setting up monitoring and evaluation schemes (Speed et al., 2016; Beechie et al., 2010; Prior, 2016).

- Identifying project objectives and goals

Measurable objectives and goals must be identified early when planning a river restoration project; these goals should target specific concerns (Speed et al., 2016; Hassett et al., 2005; Kondolf, 1998). An objective is deemed measurable if there are mechanisms or indicators that can be used to evaluate its achievement (Speed et al., 2016; Palmer et al., 2005). This simply means that realistic objectives that can be evaluated should be set, and that criteria for evaluation should be developed
along with the objectives (Morandi et al., 2014). This allows one to know if the intended objective was achieved. Restoration projects should have both short and long-term goals that should guide it towards sustainable outcomes. Objectives should be framed towards ecosystem services and desired socioeconomic benefits (Speed et al., 2016).

- **Forming a collaborative team**

River restoration planning also involves the teaming up of like-minded stakeholders who are given the responsibility for ensuring the successful planning and implementation of restoration projects (Lovett and Edgar, 2002). Stakeholders or partners could be the government, NGOs, interested organizations, national bodies, funding agencies, academics and the general public. Restoration projects require collaborative efforts among partners to facilitate and guide decision making, planning and implementation (Lee and Choi, 2012; Speed et al., 2016). Planning a restoration project is a vigorous process that requires the input and involvement of many stakeholders before it is implemented (Lee and Choi, 2012). This process should create a positive communicative environment. Studies have shown that multi-stakeholder involvement and individual and public participation in decision making and policy implementation are key processes in river restoration projects (Lee and Choi, 2012; Woolsey et al., 2007).

- **Designing a restoration project framework**

Designing a restoration project framework or strategy of action considers the scale of the project, project priorities, budget and implementation strategies (Speed et al., 2016). After identifying specific goals and objectives of the river restoration project, involved stakeholders must then decide priority areas and the scale at which the project will run (Speed et al., 2016). These decisions are often guided by cost, available budget, specific goals identified and the overall feasibility of the project. The framework should also consider the appropriate strategies to address the specific
project objectives (Speed et al., 2016). The River Calder Fish Migration improvement project, for example, was established to allow the free movement of fishes; this was achieved by reducing the height of the existing weir structure and creating a rock ramp (RRC, 2013). Strategies chosen must be effective in achieving the desired results (Speed et al., 2016).

Restoration projects should be designed to address the root causes of degradation (Beechie et al., 2010) and should prioritize and reduce human impacts (Verdonschot et al., 2009). The NRBP, for example, focuses on relocating informal settlements and stopping illegal waste discharge because these are the primary causes of river degradation (NRBP leaflet, 2009).

- **Setting up monitoring and evaluation schemes**

Monitoring and evaluation methods should also be considered when planning a restoration project (Speed et al., 2016). Once measurable objectives with clearly expected outcomes have been identified (Beechie et al., 2010), scientific and social indicators can be used to assess if the project is doing what it set out to achieve. These monitoring strategies should be built into the objectives and design framework to allow proper management and assessment.

### 2.2.1 Funding

Restoration projects require large financial resources and secure funding. Restoration projects are often financed through government funds, loans, trust funds or support from other organizations. The US, for example, spent an estimated one billion dollars yearly on river restoration between 1995 and 2004 (Bernhardt et al., 2005). Approximately 82% of projects in the California database on river restoration projects reported a total cost of more than $2 billion within 25 years; individual projects ranged from $200 to $150,000,000 annually (Kondolf et al., 2007). The EU’s LIFE Program provided £1 million in 1991 to fund the River Cole and River Skerne restoration projects.
(Prior, 2016). The River Calder Fish Migration improvement project, established in the UK in 2010 and costing £406,000, was funded through the Ribble Catchment Conservation Rivers trust (RRC, 2013).

The NRBP is funded by the African Development Fund, United Nations Environmental Program (UNEP) and the GOK. The African Development Fund has loaned the Kenyan government the sum of UA\(^1\) 35 million to finance the NRBP Sewerage Improvement Project (Athi water, 2017; NRBP procurement notice, 2014), while the UNEP is to provide the sum of 190,000 USD to the United Nations Development Programme (UNDP) for preparing and implementing specified NRBP activities (UNDP, 2014).

2.3 Collaborative Governance in River Restoration

Collaborative governance is simply the involvement of several actors in river restoration decision making, including the government and relevant agencies, professional bodies (e.g., academics), the private sector (e.g., industry), other stakeholders (e.g., NGO’s), related organizations and the general public (Gerlak, 2008). Understanding the role of governance in river restoration helps us understand the means of involvement of several actors, the roles they have in decision making and the mechanisms behind river restoration projects.

Establishing river restoration projects requires government initiatives and often policy (Morandi et al., 2014; Lee and Choi, 2011). River degradation would continue to be an issue if government and decision makers did not establish policies and programs that promote restoration projects to rehabilitate and return degraded rivers to a near natural form. The restoration of the Rhine and

\(^1\) UA is the official currency for African Development Bank projects. 1 UA=1 SDR (International Monetary Fund Special Drawing Rights).
Thames rivers, for example, started with policies that had the aim of rehabilitating and restoring the highly degraded rivers. Those policies fostered successful restoration management practices.

Government contributions by way of laws, policies, and programs are important in restoration activities because they provide a framework and create tools that can either help to restore or cause further river degradation. It is important to have a government that cares about sound environmental and resource management and river ecosystem conservation, that is willing to set up mechanisms to encourage these and that is transparent in all its activities. This was also recommended by Lee and Choi (2012) in their paper on the establishment of river governance on the Incheon stream restoration project, South Korea. They highlight that government transparency would improve trust and foster better relationships among the government, other agencies and the general public.

While the importance of government contributions in restoration initiatives cannot be over emphasized, the role of non-profit organizations, NGO’s and supporting agencies also contribute greatly to restoration initiatives in terms of funding and support on the ground. Organizations like the River Restoration Centre (RRC), who serve as a nonprofit advisory group to the UK government, have provided immense support and contributed greatly to the documentation of restoration projects (Prior, 2016; RRC, 2013). The International River Foundation also supports river restoration through funding awards and by recognizing remarkable restoration initiatives via the International Thesis River Prize. They strive to promote integrated river management through restoration and sustainable management of river ecosystems (International River Foundation, 2017).
Vreugdnhila et al. (2008), in their paper on the impacts of governance styles on river restoration in northwestern Europe, compared the extent and means of involvement of several actors in river management plans in Germany, France and the Netherlands. The authors examined the Integriertes Rhein Program in Germany, the Plan Loire Grandeur Nature in France, and the WaalWeelde in the Netherlands. The paper evaluated the governance styles based on the connectedness of actors and issues, financial resources, policy learning and societal background. Of the three restoration projects evaluated, the WaalWeelde had larger involvement of various actors (government, the private sector, industry and the public), and as such implementation is expected to go smoothly.

As stated above, restoration projects require the collaborative efforts of several partners and actors to facilitate and guide decision making, planning and implementation – in other words, collaborative governance (Lee and Choi, 2012; Speed et al., 2016). Active involvement of diverse stakeholders promotes trust, understanding and effective resource management and conservation (Ansell and Gash, 2008). Further, public involvement in restoration projects facilitates learning, creates a sense of inclusion and allows the continued protection of resources even after restoration initiatives have been implemented (Phalen 2009; Bakker et al., 2014).

Effective involvement, however, cannot occur without proper consideration and understanding of stakeholder financial, legal or environmental needs and interests (Council, 2005). Depending on the size of the river catchment to be restored, it can attract a wide range of stakeholders. In cases where a very large number of stakeholders are involved it might be difficult to engage everyone. In such cases it may be necessary to target groups or organizations that represent the interests of diverse river users (Council, 2005).
2.4 Assessing the Success of River Restoration Projects

“How then do we measure the success or failure of a river restoration project” – this question has been debated for some time without any consensus being reached (Jahnig et al., 2011). There is, however, a variety of literature that suggests that clear goals and objectives must be formed in order to develop criteria for measuring either the success or failure of a river restoration project (Kondolf, 1998; Palmer et al., 2005; Palmer et al., 2010; Morandi et al., 2014; Bernhardt et al., 2007; Jahnig et al., 2011). The European Water Framework Directive (2000) highlights the need for feedback from restoration projects and for assessing river restoration success (Morandi et al., 2014; England et al., 2008). This information would guide decision making, prevent future mistakes and facilitate better management practices (Speed et al., 2016; Beechie et al., 2010; Morandi et al., 2014).

Several papers suggest that river restoration success can be measured via objective parameters, such as hydro-morphology, hydrological changes, and biotic, biodiversity and recreational values (Palmer et al., 2010; Woolsey et al., 2007, Bernhardt et al., 2005, Jahnig et al., 2011), as well as via subjective parameters, such as preferences, sense of landscape scenery and public satisfaction (Palmer et al., 2005; Woolsey et al., 2007; Jahnig et al., 2011). Successful restoration is judged objectively by increased biodiversity, improved water quality and enhanced functionality of ecosystem services (Palmer et al., 2005), whereas success from a subjective view is based on the enhancement of aesthetic values and strong public support (Woolsey et al., 2007).

Objective parameters are easy to measure through the use of scientific instruments to evaluate success. Instruments like contingent valuation, morphological calculations, water quality analyses and toxicology reports can be used to evaluate changes in ecosystem functions (Alam, 2003). These instruments measure ecosystem changes, such as pollution levels and biodiversity; this way
we can tell if the river restoration projects are having a positive impact. Objective parameters have scientific evidence, and hence they are considered more reliable (Bernhardt et al., 2007; Palmer et al., 2005; Palmer et al., 2007).

Subjective parameters, on the other hand, rely on perceptions, feelings and senses (Palmer et al., 2005). River restoration success can be measured using subjective parameters such as preference, sense of landscape scenery and public satisfaction (Palmer et al., 2005; Woolsey et al., 2007). River restoration can be considered successful based on an increased satisfaction with public spaces and scenery. If the community is satisfied with new imagery and views along degraded rivers, the river restoration can be termed successful. Public support and satisfaction with restoration initiatives is very important (Alam, 2013; Lee and Choi, 2012); therefore, subjective parameters are very useful in considering public views when evaluating the success of river restoration projects.

The differing perspectives of success and how we assess it must be considered prior to formulating river restoration goals (Palmer et al., 2005). It is important to be aware of these different measurable parameters during planning and consider which are to be used in evaluating river restoration success. The value and importance of each parameter should also be decided during planning. This is because the aesthetic value of a degraded river can improve in as little as one year, while the pollution load is still considerably high. Would we then assess the restoration project as successful because the landscape and scenery have greatly improved, despite troubling pollution concerns? Also, subjective parameters might vary based on individual perception, whereas objective parameters would remain the same due to strong scientific evidence. This is why it is important to identify measurable parameters from both perspectives.
Identifying complementary subjective and objective parameters allows for the effective evaluation of restoration projects (Palmer et al., 2005; Jahrig et al., 2011). Although subjective and objective parameters stem from different viewpoints and sometimes conflicting perspectives (Palmer et al., 2005), it is necessary to monitor river restoration success from different perspectives to support informed decision making and better management practices (Speed et al., 2016; Morandi et al., 2014). Since river restoration is an interdisciplinary process that integrates social and scientific measures, assessing the success of river restoration should also combine both perspectives (Jahrig et al., 2007).

Based on the literature (e.g., Palmer et al., 2005; Woolsey et al., 2007, Hassett et al., 2005), the indicators used in assessing the success of the NRBP would combine subjective and objective parameters if available, as captured in Table 2.1.

### Table 2.1: Indicator categories to assess the success of the NRBP (Adapted from Palmer et al., 2005, p. 209; Woolsey et al., 2007, pp. 756-757).

<table>
<thead>
<tr>
<th>Indicator category</th>
<th>Criteria/ indicator</th>
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<tbody>
<tr>
<td>Stakeholder success:</td>
<td>Satisfaction of stakeholders with project design, implementation and results so far.</td>
</tr>
<tr>
<td>Stakeholders = all collaborating partners</td>
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<tr>
<td>Public perception and satisfaction:</td>
<td>Public support and acceptance of project.</td>
</tr>
<tr>
<td>Public = NGO’s, interested groups, general public</td>
<td>Satisfaction of public with project design, implementation and results so far.</td>
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<td></td>
<td>Satisfaction of public with participation opportunities.</td>
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<td></td>
<td>Level of public awareness and involvement.</td>
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<tr>
<td>Ecological success</td>
<td>Ecological improvements seen so far if any (review scientific evidence).</td>
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<td></td>
<td>Aesthetic and recreational values derived (increased number of visitors).</td>
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</tbody>
</table>
Learning success | Change in individual perception or attitude as a result of engaging in restoration activities. Activities that facilitate knowledge sharing or educative processes.

### 2.5 Public Participation in River Restoration Projects

Community-based restoration is a powerful instrument to systematically address many of our destructive tendencies, and, in this exercise, to culturally transform society toward a saner, healthier relationship with the environment (Dienno and Thompson, 2013 p. 63)

Public participation in river restoration is encouraged by having an open and structured process where the public can share their views freely and influence decision making (Wouters et al., 2011; Heldt et al., 2016; Carr, 2015). Stewart and Sinclair (2007) define meaningful public participation as a process where the public is involved early in project planning, adequate notice is given prior to meetings, dialogue and discussions are fair and the public has easy access to all relevant information.

Public engagement is very important and central to the successful implementation of river restoration projects (Alam, 2003; Schusler et al., 2003). Public acceptance and participation is one of the indicators for successful restoration projects identified in Woolsey et al. (2007). Restoration plans can be frustrated if the public is not on board or does not participate in the development of, or understand the reasons for, the restoration goals set, or worse yet is not involved in their initial development (Woolsey et al., 2007).

Public involvement should occur at different stages in restoration project planning (Woolsey et al., 2007). Since river restoration projects depend greatly on public support and a change in human attitude (Speed et al., 2016; Alam, 2003), it is wise to get the public on board and involved in planning from the start. It is necessary to plan for the participation of the general public in liaison
with stakeholders to allow meaningful participation, the free flow of information and long-term commitment from all parties (Lee and Choi 2012; Junker et al., 2010). Meaningful participation means that at a minimum the public should be involved early in the planning, adequate notice should be given prior to meetings, easy access to the information and decisions should be provided and there should be room for fair, open and safe dialogue and discussions (Stewart and Sinclair, 2007; Piovesan, 2013). Fair dialogue can be encouraged by allowing a good representation of community members in meetings and encouraging input and feedback from all representatives (Stewart and Sinclair 2007). Also, coercion techniques should not be used in hopes of achieving a desired end (Sinclair and Diduck, 2001; Luyet et al., 2012; Wouters et al., 2011). These conditions allow for open communication, which can also help satisfy the ideal conditions for learning (Webler et al., 1995).

Meaningful participation in restoration planning would build confidence and trust amongst all parties and facilitate learning (Sinclair and Diduck, 2001). By involving the public in the planning of restoration projects, room is provided for information sharing and learning. Also, once the restoration projects are underway, it is easier for the public to engage and participate fully in restoration activities because they are well informed and have been involved in the planning for a long time, which increases support for restoration efforts. Public contributions during planning should be considered in the final decisions made. River restoration projects should be based on the acceptance of individual and communal goals (Lee and Choi, 2012).

The EU’s Water Framework Directive also emphasizes the need to encourage public participation to balance the interests of various stakeholders and increase transparency (Hansen and Mäenpää, 2008; European Commission, 2000). Member states are required to sustainably manage their river basins and encourage the active involvement of all parties involved in the planning of River Basin
Management plans to improve the quality and process of decisions made (Hansen and Mäenpää, 2008; European Commission, 2000).

Public perception surveys indicate substantial support for river restoration (Thorp et al., 2010; Tunstall et al., 2000), and even the willingness to pay for restoration initiatives (Turnstall et al., 2000; Alam, 2013). Participants in a study conducted by Dienno and Thompson (2013) described their engagement in restoration initiatives as an obligation and responsibility to care for and protect the environment. They freely expressed their joy and satisfaction derived from engaging in these restoration activities. The authors show that people’s values and emotions clearly motivate their willingness to participate in restoration activities.

Public participation in restoration projects has enhanced cooperation among community members and allowed continued protection of resources even after restoration initiatives have been implemented (Phalen, 2009). Allowing the public to engage in restoration efforts creates a sense of ownership and ties to resources; hence, they feel the need to continue to protect and conserve these resources even after restoration initiatives have been implemented (Alam, 2003). Further, restoration goals can be accomplished faster if there is public cooperation and collaboration among stakeholders (Tunstall et al., 2000; Lee and Choi, 2012; Speed et al., 2016).

Public engagement in restoration activities also helps to facilitate learning and increases awareness of restoration goals (Tunstall et al., 2000; Alam, 2003). River restoration projects mostly occur in urbanized areas with high populations, and local residents play a contributory role in river ecosystem issues. Engaging in restoration initiatives allows participants to gain more insight and knowledge of the benefits of restoration activities, this facilitates learning and change in attitude over time (Tunstall et al., 2000).
The extent and level of public involvement in restoration activities is influenced by social
dynamics, culture and demographics (Palmer et al., 2005). Alam (2013) identified factors
influencing public participation in a developing country in the case of the Buriganaga river
ecosystem in Bangladesh, using the contingent valuation method. He found strong support among
residents for restoration initiatives; however, willingness to participate was based on individual
perception and socio-demographic characteristics such as age, gender, race, the level of education,
occupation and household income. He found that the more educated in the population were more
willing to participate simply because they had more knowledge and were more informed about
environmental issues and river restoration benefits.

Common barriers hindering public engagement in restoration projects include lack of awareness,
lack of trust in government policies, public distrust and cynicism, individual perceptions, values
and socioeconomic demographics (Alam, 2013; Dienno and Thompson, 2013; Palmer et al., 2005;
Tunstall et al., 2000). The literature notes that this can be overcome by continuous involvement
and improved dialogue and public participation mechanisms (Wouters et al., 2011; Hansen and
Mäenpää, 2008; Alam, 2003).

These barriers can be overcome by increasing public awareness and educational programs on
conservation and restoration goals. These activities can influence change and shift values over
time. Public awareness can be increased using appropriate media and education programs;
education programs should include learning about river degradation, water protection and
restoration issues.

The form and level of public participation can vary from case to case depending on the project and
governance style (Luyet et al., 2012). While public participation has many advantages, it is a very
intensive process which when done effectively can improve trust, and guarantee a positive attitude towards the project as supposed to a non-inclusive approach (Heldt et al., 2016). Participation, learning and enhanced awareness can provide additional benefits for longer-term restoration efforts and inform better decision making and management practices (Alam 2013; Petts 2016).

Drawing on Article 14 of the Water Framework Directive, (European Commission, 2000); Stewart and Sinclair 2007 and Sinclair and Diduck 2001, the specific criteria to be used for considering public participation in this research include the categories and criteria in Table 2.2.

Table 2.2: Criteria for considering public participation
(Public = NGO’s, interested groups and the general public)

<table>
<thead>
<tr>
<th>Category</th>
<th>Criteria</th>
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<tbody>
<tr>
<td>Public participation in river restoration</td>
<td>Early involvement in decision making.</td>
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<tr>
<td>planning and design.</td>
<td>Access to readable information via websites or documents.</td>
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<td></td>
<td>Public consultations and meetings before final decisions were made.</td>
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<tr>
<td></td>
<td>Level of public input incorporated in final plans.</td>
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<tr>
<td></td>
<td>Funding.</td>
</tr>
<tr>
<td>Public participation in river restoration</td>
<td>Opportunities for public participation.</td>
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<tr>
<td>activities.</td>
<td>Collective and individual actions towards restoration activities.</td>
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<tr>
<td></td>
<td>Community feedback and progress report mechanisms.</td>
</tr>
<tr>
<td></td>
<td>Funding.</td>
</tr>
</tbody>
</table>

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2.5.1 Public participation in Kenya

There are legal provisions for public participation in Kenya contained in the Kenyan constitution. Articles 174(c) and 184 (1) require that public participation be undertaken at various levels of government before a decision is made (Githinji, 2018; Mariru, 2018). The 2010 Kenyan constitution, Article 174(c) provides that the objective of devolution is to “enhance the participation of people in the exercise of the powers of the State and in making decisions affecting them”. Article 184(1) (c) further requires that mechanisms “for participation by residents” be included in national legislation regarding urban areas and city governance and management. In the public participation bill passed in 2016, objectives 3e and 3f are to “promote community ownership of public decisions, and promote public participation and collaboration in governance processes”. This encourages a democratic and transparent process (Mariru, 2018). The overall goal is more inclusive involvement of the public in decisions that affect them through providing information and the opportunity to have input into the decisions being made (Mariru, 2018).

Despite these existing constitutional requirements and legal provisions, achieving effective public participation in Kenya has been challenging. The existing literature establishes many constraints on public participation in Kenya (Walker et al., 2014; Ronoh et al., 2018), which include document inaccessibility, inadequate resources and the lack of community engagement skills. Similar challenges were identified in a 2000 World Bank study on challenges to effective public participation (Ronoh et al., 2018; Sisk, 2001). Further challenges hindering effective public participation identified in the literature include providing short notice of meeting time and location to citizens, inadequate time to reflect on possible topic areas prior to meetings and other inadequacies of public participation processes (Walker et al, 2014; Ronoh et al., 2018).
2.6 The Concept of Social Learning

“Success is more likely if a social learning process occurs among different stakeholders” (Schusler et al., 2003, p. 311)

Social learning draws its roots from different learning theories (Petts, 2006), and is commonly used in social science disciplines and natural resource management research (Pahl-Wostl and Hare, 2004; Muro and Jeffrey, 2008). It is important to understand how social learning occurs and to implement processes that encourage it if we want public participation to shift values and influence behavior change (Bull et al., 2008).

Early works on social learning (e.g., Bandura 1969; Bandura and Walterz, 1977) define social learning as the learning of individuals in a social environment (Bull et al., 2008; Pahl-Wostl and Hare, 2004). Recent literature, however, suggests that social learning is more than individual learning within a social context (Petts, 2007, 2006; Bull et al., 2008; Schusler et al., 2003; Reed et al., 2010). Individual learning is simply the ability of individuals to gain knowledge and reflect on insights not necessarily within a group (Schusler et al., 2003; Reed et al., 2010), and individual learning outcomes will vary from learner to learner (Fenwick, 2008). Social learning, on the other hand, involves group processes and shared knowledge that facilitates joint and collaborative actions (Pahl-Wostl and Hare, 2004). While the original definition focuses simply on the cognitive process of individuals, Schusler et al. (2003, p. 311) define social learning as “learning that occurs when people engage one another, sharing diverse perspectives and experiences to develop a common framework of understanding and basis for joint action”.

Social learning theory suggests a dynamic view that emphasizes the interaction between individuals and their environment (Pahl-Wostl et al., 2007). Reed et al. (2010) define social learning as “a change in understanding that goes beyond the individual to become situated within
wider social units or communities of practice through social interactions between actors within social networks such as workshops”. They argue that for the social learning process to occur, individuals must experience a change of view or understanding, a change that goes beyond the individual's mind and must occur within a social context, influenced by social norms and shaped through social interactions and communities (Bull et al., 2008; Maarleveld and Dabgbégnon, 1999).

Webler et al. (1995) describe two components of social learning: cognitive enhancement and moral development. The authors describe cognitive enhancement as the acquisition of skills and knowledge, including:

- learning about the state of the problem;
- learning about the possible solutions and the accompanying consequences (cause-effect relations, predictions);
- learning about other peoples' and groups' interests and values (information, explanation);
- learning about one's own personal interests (reflection);
- learning about methods, tools, and strategies to communicate well and reach agreement (rhetoric, decision theory, small group interaction);
- and practicing holistic or integrative thinking (p. 446).

Moral development describes how individuals learn to make better judgments, develop problem-solving skills and a sense of responsibility, and act accordingly (Webler et al., 1995). This can occur as a result of a change in understanding, having a value shift or by developing a new sense of responsibility or solidarity (Bull et al., 2008).

Public engagement in restoration activities is argued to be the ‘right thing to do’, not only because it informs better decisions but because it creates necessary conditions that facilitate learning (Petts, 2006). Learning can occur through direct experience, observing other people’s experience or by group interactions and discussions (Maarleveld and Dabgbégnon, 1999). Learning usually starts from individuals, with the purpose of learning being to generate new behaviors (Schusler et al., 2003; Bull et al., 2008; Muro and Jeffery, 2008). As a group, social learning can occur through
public collaboration and deliberation, by reflecting and setting new goals (Salomon and Perkins, 1998; Schusler et al., 2003). Social learning involves information sharing and developing shared understanding among individuals within a social context through deliberative processes (Schusler et al., 2003).

Bull et al. (2008, p. 701) suggest further that, “Social learning should be a strong component, as well as an important outcome of public participation, particularly forms of engagement based on deliberation”. Deliberation includes any “process to communicate, raise and collectively consider issues, increase understanding, and arrive at substantive decisions” (NRC, 1996; Schusler et al., 2003, p. 311). Deliberation induces reflection in a non-coercive way (Bull et al., 2008). A deliberative process, which can occur through public meetings or dispute resolution, allows people to learn, reflect and more importantly share their knowledge and values with others (Bull et al., 2008; Pahl-Wostl et al., 2007). By working together and engaging in deliberative processes, “citizens have the potential to transform into responsible democratic citizens” (Bull et al., 2008, p. 711). This is because deliberative processes allow participants to identify common values and create new ones; hence the need to form a joint action plan that addresses the issues at hand. Successful deliberation can lead to social learning when individuals and groups develop better meanings and understanding of issues, facts and problems (Bull et al., 2008). Figure 2.1 provides a graphical summary of social learning deliberative processes.
Figure 2.1: Social learning deliberation process (Schusler et al., 2003, p. 317)

A social learning perspective in the resource management context considers governance structures by focusing on social processes and involvement in decision making (Pahl-Wostl et al., 2007). Since resource management strives to maintain a balance between sustainable resource use and human needs, management strategies should be collaborative. Improved resource management can occur if people learn from each other and form a collaborative or joint plan for action (Bull et al., 2008).

Mostert et al., (2007) and Pahl-Wostl and Hare (2004) all focused on social learning with emphasis on the importance of collaboration, organization and learning in European river basin management. Data analyzed from 10 participatory river basin management projects identified several cases of social learning within the participatory processes, which led to an increased understanding of river management issues among stakeholders, built trust and improved relations, and resulted in better decision making. Mostert et al. (2007) further identified factors hindering
and promoting social learning. The factors were classified into eight themes: the role of stakeholder involvement, politics and institutions, opportunities for interaction, motivation and skills of leaders and facilitators, openness and transparency, representativeness, framing and reframing and adequate resources. These findings are in line with other works that identified factors fostering social learning (e.g., Schusler et al., 2003; Petts, 2006; Petts, 2007).

Tippet et al. (2005, p. 288), in their paper on social learning in public participation in river basin management based on early findings from HarmoniCOP European case studies, define social learning in river basin management as “the capacity of different authorities, experts, interest groups and the public to manage their river basins effectively”. They further suggest that social learning is an outcome of an inclusive, participatory process if river basin management is to be successful. The EU Water Framework Directive also mentions social learning, emphasizing the need for effective collaboration among stakeholders and early involvement, as it helps all stakeholders achieve a better result (HarmoniCOP, 2005; Tippet et al., 2005; Water Framework Directive, 2002).

Drawing on the literature (e.g., Petts, 2006; Muro and Jeffery, 2008; Schusler et al., 2003; Mostert et al., 2007), I identified key social learning elements and outcomes (Table 2.3) that I used in considering the social learning approaches and outcomes in the NRBP. Process elements includes attributes that encourage social learning outcomes.
Table 2.3: Social learning process elements and outcomes

<table>
<thead>
<tr>
<th>Process elements</th>
<th>Outcomes</th>
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<tbody>
<tr>
<td>Open communication</td>
<td>Acquisition of knowledge</td>
</tr>
<tr>
<td>Collaborative framing</td>
<td>Acquisition of technical skills</td>
</tr>
<tr>
<td>Active participation</td>
<td>Acquisition of social skills</td>
</tr>
<tr>
<td>Diverse participation</td>
<td>Change of attitudes</td>
</tr>
<tr>
<td>Multiple sources of knowledge</td>
<td>Trust</td>
</tr>
<tr>
<td>Unrestrained thinking</td>
<td>Collective action</td>
</tr>
<tr>
<td>Facilitation</td>
<td>Common understanding</td>
</tr>
<tr>
<td>Constructive conflict</td>
<td>Increased understanding of issues</td>
</tr>
<tr>
<td>Group work, repeated meetings</td>
<td></td>
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<tr>
<td>Extended engagement and facilitation</td>
<td></td>
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</tbody>
</table>

2.7 Kenyan Water Policies

Kenya struggles with continuous water pollution, water scarcity, drainage challenges and river over-exploitation and degradation. The GOK has developed several policies and institutions to reduce, improve and to try to eliminate these problems. For example, the 1974 Kenyan Water Act is aimed at ensuring potable water is available to all households (Ogendi and Ong’oa, 2009). As the 1974 Water Act did not cover several broader issues, such as water scarcity, degradation or pollution, it has undergone several revisions, including in 1999, 2002 and most recently in 2016. The 2016 Kenya Water Act “repeals the 2002 Act with the aim of improving services and providing the regulation, management and development of water resources and water and sewerage services in line with the Constitution” (Kenyan Water Act, 2016, p. 8).

Through the National Water Service Strategy (NWSS), established in 2007, institutional reform was implemented to clearly redefine regulatory roles and set up clearer institutional frameworks for water management, as Figure 2.3 depicts. The Ministry of Water and Irrigation (MWI) is at the
top of the pyramid and has the responsibility for developing water legislation, policies, coordination and resource mobilization (NWSS, 2015). The Water Services Boards, including Athi Water Services Board (AWSB), were set up to develop water and sewer facilities, and to undertake planning and implementation of policies (NWSS, 2015). The functions of the eight water services boards have been transferred to the 47 Water Works Development Agencies. These agencies are closely monitored and regulated by the Water Services Regulatory Board (NWSS, 2015).

**Fig 2.2: Schematic representation of institutional framework for water sector (per Water Act, 2002) (NWSS, 2007, p. 4)**

The specific goal of the NWSS is “to ensure sustainable access to safe water and basic sanitation to all Kenyans” (NWSS, 2007, page 6). The broad goals of the NWSS include actions to: “increase sustainable access to water complying to the Kenyan standards such as drinking water quality from 40% to 75% in the rural setting by 2015 and reduce the distance to the nearest public/communal outlet to 2 Km; reduce unaccounted for water due to both economic and technical losses from the current average of 60% to 30% by 2015; increase access to waterborne sewage collection, treatment and disposal from 30% to 40% in the urban setting and from just under 5% to 10% in
the rural setting by 2015; and ensure effluent discharge shall meet the relevant Kenyan standards including Environmental Management and Coordination Act” (NWSS, 2007, p. 7).

The guiding principles of the NWSS include: “sustainable access to safe water and basic sanitation is a human right; separation of policy and regulatory functions from service provision; decentralizing of responsibilities and decision making applying the principle of subsidiary for water services; sustainability of WSS systems through cost-recovery; well defined standards and regulation for service water delivery; and Public-Private Partnerships promoted to develop capital projects where feasible” (NWSS, 2007, p. 7).

The National Water Masterplan 2030 was prepared in 2007 and launched in 2014 with key objectives of: “assessing and evaluating the availability, reliability, quality, and vulnerability of the country’s water resources up to around 2050 taking into consideration climate change; renewing the National Water Master Plan towards the year 2030 taking into consideration climate change; formulating an action plan for activities of WRMA [Water Resources Management Authority] up to 2022 to strengthen their capability; strengthening the capacity of water resources management through transfer of technology” (WASREB, 2019).

Also relevant to Kenyan water policy, the National Environmental Policy, 2013, responds to some of the water and river challenges the country faces as well under Section 4.2 concerning Freshwater and Wetland Ecosystems. The policy states that the government will:

- Develop and implement integrated freshwater and wetland resources management strategies and action plans;
- Develop and implement catchment-based wetland management plans for all Ramsar sites through a participatory process;
- Ensure rehabilitation and restoration of degraded wetlands, riverbanks and lakeshores and, as appropriate, promote and support establishment of constructed wetlands;
- Harmonize and coordinate the roles of various regulatory agencies charged with the management of freshwater and wetland ecosystems;
- Involve and empower communities in the management of fresh water and wetland ecosystems. (NEMA, 2013, p.12).
And finally, the Draft National Wetlands Conservation and Management Policy, 2013, Section 3.2.1, refers to the restoration and rehabilitation of degraded wetlands, stating that the “Government shall put in place monitoring frameworks to ensure maintenance of wetland integrity”. Further, section 3.3.3, regarding education and public awareness, stipulates that the government shall “Promote education and public awareness on wetland resources to encourage understanding and participation of the public, private sector, county governments, NGOs and other interested parties through all appropriate means” (National Wetlands Conservation and Management Policy, 2013, p.18).

These regulations and institutional frameworks are in line with the Vision 2030, which is aimed at improving water services and sanitation in Kenya by 2030 (Vision 2030, 2017). Vision 2030 is a long-term strategic plan, initiated in 2008, that aims at improving the Kenya’s infrastructure and standard of living in a clean and healthy environment by 2030 (Vision 2030, 2017). Three overarching pillars of Vision 2030 include economic, social and political considerations (Vision 2030, 2017). Under Vision 2030, the government plans to rehabilitate urban water supplies as well as urban rivers.

As seen in the above discussion, river restoration goals are interwoven into numerous policies as well as institutional frameworks, and some of these were referred to in the restoration documents I reviewed and by my participants, as outlined in the results chapters.
2.8 The Nairobi River Basin

2.8.1 Issues and Threats

As a developing country, Kenya’s river ecosystem management issues are further magnified due to high population, poverty, poor waste management, water pollution and weak regulations and policies (Alam, 2013; Ndritu et al., 2003; Bowonder, 1987; Kithia, 2012b). Kenya’s population is rapidly increasing and has more tripled within the last 50 years: data reports a population of 10.9 million in the 1969 census (Kenya Population Data Sheet, 2011), 38.6 million in 2009 (Demographic, 2014) and 46 million in 2016 (World bank data, 2017). Large segments of the population live in unfavorable conditions lacking access to clean water, health care, education and sanitation. About 42% of its population lives below 1.9 USD a day, which is the international poverty line set by the World Bank (UNICEF, 2017; World Bank, 2017). With about 14% of the total population (nearly three million people) residing in its largest and capital city, Nairobi (Kenya Population Data Sheet, 2011; Tibaijuka, 2007), there is increased competition for available amenities and an over-exploitation of resources (Kithia, 2012b). About 56% percent of the city’s residents live in congested informal settlements located along the river banks (NRBP leaflet, 2009).

Illegal waste disposal from informal settlements, industries and agricultural farms, to mention a few, have contributed greatly to the Nairobi River degradation and pollution (Tibaijuka, 2007). Most parts of the city lack functioning or adequate sewage systems; regulations for managing and enforcing proper waste management practices are also lacking (Blacksmith, 2011; Kithia, 2012b). The river also receives a considerable amount of untreated water from Dandora Sewage Treatment Plant and several drainage channels that gather storm water from Nairobi City (Ndritu et al., 2003; Tibaijuka, 2007). Pollution levels in the Nairobi River Basin have increased greatly as a result of
accumulated untreated sewage and uncollected garbage. Research has indicated high levels of toxic compounds, heavy metals and high biological and chemical oxygen demand (Kithia, 2012b; Musyoki et al., 2013). High biological and chemical oxygen demand as a result of oxygen depletion affects the river’s carrying capacity and ability to sustain life and biodiversity. Despite this high level of pollution, farmers along the Nairobi River and its tributaries continue to use polluted waters and raw sewage for irrigation; almost half of the vegetables consumed in the city of Nairobi are grown on the banks of polluted rivers (Tibaijuka, 2007). Drinking highly contaminated and polluted water can cause water-borne diseases and expose residents to serious health issues (Kithiia, 2012b; Ongwenyi, 1997).

All of these factors and more have contributed to the highly degraded Nairobi River Basin, and hence the need to rehabilitate and restore the river basin to improve ecosystem services, biodiversity and the entire riverine landscape. This is why the NRBP was established.

2.8.2 Nairobi River Basin Rehabilitation and Restoration Project (NRBP)

The name Nairobi originates from the Maasai phrase *enkare Nairobi*, which means “a place of cool waters” (Tibaijuka, 2007; Mitullah, 2003). Although Nairobi City does not emulate its name at the moment, the GOK, in collaboration with several stakeholders, is determined to restore it to a place of cool waters indeed, through the NRBP.

The NRBP was designed through an extensive multi-stakeholder consultative and participatory process (UNDP final report, 2014). Collaborating partners involved in planning and implementing the NRBP are: UN agencies (UNEP, UNDP and UN-Habitat), the Kenyan Ministry of Environment and Natural Resources, the National Environment Management Authority (NEMA), Nairobi City Council, the University of Nairobi, AWSB, the Water Resources Management
Authority, Ministry of Water and Irrigation (MWI), the African Development Bank (ADB) and Nairobi Central Business Association (UNDP final report, 2014).

The NRBP was funded by the African Development Fund, UNEP and the GOK. The African Development Fund has loaned the Kenyan government the sum of UA 35 million to finance the NRBP Sewerage Improvement Project (Athi water, 2017; NRBP procurement notice, 2014), while the UNEP is to provide the sum of 190,000 USD to the UNDP for preparing and implementing specified activities of the program (UNDP Final report, 2014).

The NRBP was launched in 1999 and has since undergone three phases. Phase I was conducted to provide background data on the issues to be addressed, which included determining the status and impact of pollution on the Nairobi River and its tributaries. Phase II foc used on pollution monitoring and assessment of the Motoine/Ngong River, a tributary of the Nairobi River system. The 3rd phase aimed at implementing strategies that improve, rehabilitate and restore the Nairobi River Basin.

The NRBP phase III identified the program’s main objective as being to “rehabilitate, restore and sustainably manage the Nairobi River Basin in order to provide improved livelihoods, enhance environmental quality and values through well-regulated economic and recreational ventures in order to improve livelihoods and enhance the environmental quality” (NRBP leaflet, 2009). This was to be achieved through a ten-point strategy, listed below:

1. Creating awareness and assessing social impacts
2. Survey and delineation of the riparian reserve
3. Stopping illegal discharges
4. Completing work on a 2.5 km demonstration stretch
5. Relocating economic activities and informal settlements
6. Developing and implementing an integrated solid waste management system
7. Rehabilitation of Nairobi Dam
8. Repairing and installing sewerage and associated infrastructure
9. Developing a master plan for economic utilization of the riparian zone
10. Landscaping and beautification of the riparian zone

The GOK established two projects within the NRBP that focused on individual components of the program’s strategies. These were the Sewerage Improvement Project and the Kenya Informal Settlement Improvement Project.

- **Sewerage Improvement Project**

The Nairobi River’s Sewerage Improvement Project is a component of the NRBP that focused on building, rehabilitating and expanding sewage infrastructure to enhance sewage cleanup and the treatment of wastewater (Chanda, 2010). The project covered the Ngong, Nairobi, Mathare and Kiu river basins (AWSB, 2017). As described earlier in this chapter, most parts of the city lack functioning or adequate sewage systems; the sewerage improvement program addressed these issues by aiming to improving sewerage systems and treatment services in the city. The project was conducted by AWSB, which is one of the eight water boards under the Ministry of Environment, Water and Natural Resources and is funded by the GOK and African Development Fund (AWSB, 2017).

The three main components of the project were: wastewater infrastructure, which covers rehabilitation and expansion of the sewerage system; sanitation, hygiene and social environmental
support through awareness campaigns; and institutional support and program management (Chanda, 2010, Athi water, 2017).

- **Kenya Informal Settlement Improvement Project**

The Informal Settlement Improvement Project, funded by the World Bank, focused on improving the living conditions of residents in Nairobi’s informal settlements of Soweto, Kayole and Embakasi KCC (World Bank projects, 2017). This was to be achieved by investing in roads, security, drainage, waste management, sanitation, sewage systems and other infrastructure. The four components of the project focused on: 1) supporting institutional strengthening and capacity building of the Ministry of Housing and the Ministry of Lands; 2) supporting the systematization and scaling-up of ongoing efforts to strengthen settlement planning and tenure security in urban informal settlements; 3) investing in infrastructure delivery; and 4) planning for urban growth (KISIP report, 2014; World Bank project, 2017).

Through the NRBP, quite a number of things were achieved despite the challenges it encountered, such as the delineation of the riparian reserve, solid waste removal at the demonstration stretch and identifying and stopping 267 illegal discharges (NRBP report, 2009). Increased awareness and campaigns by the government that encouraged public engagement in these restoration activities were also noted (NRBP report, 2009).

### 2.9 Chapter Summary

The literature cited in this chapter establishes that river restoration is the process of returning degraded rivers to a near natural form through hydrological, morphological and geological measures (Woolsey et al., 2007), and that such action seeks to maintain or increase ecosystem services while improving the natural functioning of the river and entire riverine landscape (Pedroli
et al., 2002; Palmer et al., 2005). The need to implement river restoration is often motivated by existing legislation and policies and the recognition of ecosystem and socio-economic benefits, and is now widely applied to promote the conservation of river ecosystems (Bernhardt et al., 2007).

The literature also establishes that when planning a river restoration project, it is important to identify specific objectives, engage in collaborative governance that meaningfully involves the public and stakeholders in decision making and establishing monitoring and evaluation parameters. Public participation is identified as being central to the success of restoration projects (Pedroli et al., 2002) as it increases awareness of restoration goals and helps achieve them faster (Tunstall et al., 2000; Alam, 2003). Public engagement increases trust, shared understanding and learning among participants. Public engagement is also expected to facilitate collaborative actions and social learning outcomes through effective deliberation processes.

Effective evaluation of restoration projects should employ objective parameters that measure changes and improvements in hydro-morphology, water quality, biodiversity and recreational values (Palmer et al., 2010; Woolsey et al., 2007; Bernhardt et al., 2005; Jahnig et al., 2011), in combination with subjective parameters, such as preferences, sense of landscape scenery, public satisfaction and effective governance (Palmer et al., 2005; Woolsey et al., 2007; Jahnig et al., 2011).

The NRBP is certainly an important case of river restoration given the Nairobi River’s degraded condition and location in the developing world. As outlined above, the GOK has taken action to begin restoration and rehabilitation of the river, and has established key activities for carrying this out. The work being done in various stretches of the river provides a prime opportunity to learn about factors critical to success, such as community involvement and broader governance,
community learning and action, as well as behavioral changes and value shifts. Learning more about these and understanding linkages among them, especially within a developing world context, contributes to best practices for river restoration.
CHAPTER THREE – RESEARCH DESIGN AND METHODS

3.1 Introduction

According to Creswell (2007), research design refers to the plan or framework that provides direction or procedures during the research. The research design includes data collection procedures, as well as instruments for analysis and interpretation (Creswell 2007). My previous work experiences and background have led me to this research and hence guided my worldview, which is most closely associated with the social constructivist paradigm.

Creswell (2007, p. 37) states: “Social constructivists hold the assumption that individuals seek understanding of the world in which they live and work”. Thereby, individuals develop subjective meanings of their experiences and meanings that are directed toward certain objects or things. With this research lens, I explored my research participants’ experiences from their own points of view. By following a social constructivist paradigm, my questions were broad and open ended, allowing participants to construct their own meaning when providing responses. Creswell (2007) indicates that using open-ended questions allows participants to reflect deeply and draw their own meanings subjectively. Social constructivists believe that individual views are formed through social interactions, and hence my focus was on the participatory processes that my participants engaged in and what they gained from being a part of them.

Given this, it made sense for my research project to utilize a qualitative research design since “qualitative research is an approach to exploring and understanding the meaning individuals or groups ascribe to a social or human problem” (Creswell 2007, p. 32). Further, qualitative research methods help researchers understand people within the natural settings where they live by collecting data that helps us to understand the views of participants within their social context (Myers, 1997). A qualitative approach was also suitable for this research because it allowed me to
explore people’s experiences and views of the restoration project. Since I focused on causes of river degradation, its restoration and human activities within this context, a qualitative approach was most appropriate.

3.2 Case Study Strategy of Inquiry

“A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin 1981, p. 13).

The design for my qualitative research followed a case study strategy of inquiry. The case study strategy of inquiry is widely used across different disciplines, especially in social science, education and community-based research (Yin, 1981; Zainal, 2007; Rowley, 2002). Case studies consist of a unit analysis, which can vary from an individual to a group (Schell 1992). Case studies focus on finding and describing information about a single entity or a small number of entities, and they strive to provide in-depth analysis of a limited number of events, phenomenon or conditions and their relationships (Creswell, 2007). As stated in Yin (1981, p. 6), a case study is appropriate when “the extent of control an investigator has over actual behavioral events is limited” and “the research focuses on contemporary as opposed to historical events”. Both of these characteristics fit my research particularly well.

By following a case study strategy of inquiry, I was able to collect data and gain new insights about the restoration projects in real life settings. One major advantage of using case studies is their ability to capture ‘reality’, making them a good way of understanding real life issues and human behavior (Yin, 1981; Schell, 1992). Case studies are also very flexible and can involve single or multiple cases (Yin, 1981). I focused on a single case, selected based on criteria explained below, and within that I considered two sub-cases. Case study inquiry allowed me to explore and
understand participants’ perceptions and willingness to engage in restoration activities (Zainal, 2007; Woodside, 2010). Using the case study strategy also provided me with insights into individuals’ views and perceptions of the Nairobi River and related restoration initiatives.

3.2.1 Case Study Selection and Study Area

While there are many examples of river restoration projects in Europe and North America, as identified in the literature review, the same cannot be said for developing countries, especially in Africa despite widespread river pollution issues. This fact, along with the work previous Natural Resources Institute students had done in Kenya, led me to look for potential options in that country.

Through preliminary research I found that there was some river restoration activity in the Nairobi region. I decided to select two distinct cases for further learning and understanding of river restoration because I learned that it is often organized by different volunteers and government agencies, and so I wanted to get a sense of whether the key stakeholders and primary project organizers involved made a difference. Focusing on river restoration projects in Nairobi, I selected two cases using the criteria established in Table 3.1: the Nairobi River Basin Rehabilitation and Restoration Program (NRBP), led by the Ministry of Environment, and a restoration initiative led by a volunteer group, the Kibagare River Restoration Project (KRP). These cases, although both in Nairobi, are different river restoration projects organized by different groups. I thought it best to consider both cases for further learning. The KRP was not a component of the broader NRBP, described below, but instead was organized by a small group of volunteers.
Table 3.1  Criteria for case study selection

<table>
<thead>
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<th>Criteria</th>
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<tr>
<td>Active restoration</td>
<td>- Evidence of previous or ongoing restoration initiatives</td>
</tr>
<tr>
<td>Public engagement</td>
<td>- Active community groups that are working in collaboration with the government</td>
</tr>
<tr>
<td></td>
<td>- Evidence of broader public engagement</td>
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<tr>
<td></td>
<td>- Accessible documents and participants</td>
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<tr>
<td></td>
<td>- Willing and active participants</td>
</tr>
<tr>
<td></td>
<td>- Physical access and safety of study area</td>
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</table>

The NRBP was selected in part because it is identified as the premier river restoration project in Nairobi. The Nairobi River Basin consists of three main tributaries – the Nairobi, Ngong and Mathare rivers – all of which suffer from several river pollution issues arising from illegal waste disposal from informal settlements, industries and agricultural farms (Tibajuka, 2007). It was therefore compelling to consider the NRBP as it was aimed at addressing these issues. As outlined above, I also wanted to consider a river restoration project led by different stakeholders, such as a community group, volunteer community-based organization (CBO) or NGO, for further learning and deeper insights. I selected the KRP for this purpose.

In selecting both cases, I was looking for elements of previous or ongoing restoration activities and active community participation with opportunities for social learning (see Table 3.1 above). To guide my case selection, I researched potential cases that might meet my criteria through document review, active engagement and community visits. During early days in the field,

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2 “Public” is defined as individuals, groups or organizations in the community with an interest in the restoration project.
participant observation and a river walk also focused on gathering on-the-ground information about both cases to verify their fit. The NRBP met all my criteria as it showed evidence of previous restoration initiatives, community participation and social learning outcomes.

In applying my criteria and selecting my second case, I considered river restoration projects that were not within the NRBP and that were spearheaded by other civil society groups, such as the Nairobi River Regeneration Project led by Planning System Services, the Kirichwa River Restoration Project undertaken by the Friends of Arboretum and the KRP led by the Friends of City Park (FOCP). I selected the KRP based on my criteria as it was the best fit and showed great promise. For example, it was clear the FOCP fostered community engagement, ongoing restoration planning, stakeholder interaction and broad community involvement. As my work started, participants were also welcoming, willing and easy to reach. The FOCP gave me easy access to their meeting minutes and project documents as well.

A careful selection of cases following Creswell (2007) and Yin (1981) helped me reach my research objectives. In examining both cases, I focused on identifying stakeholders involved and an exploration of community participation and social learning outcomes.

3.3 Data Collection Methods

Yin (1981) establishes that the case study strategy of inquiry allows a researcher to utilize various data collection methods. To gather data to address my objectives, I used a combination of data collection methods, including document review, participant observation, river walks, semi-structured interviews and a workshop.
3.3.1 Document Review

Document review as a data collection method can be used to gather background information and gain insights about a particular project or event (Kothari, 2004). Document collection and review commenced prior to going to the field and continued throughout my field season and the remainder of my research. Prior to arriving in the field, documents considered increased my interest in the NRBP and helped me identify restoration sites, project strategies and stakeholders. Documents reviewed included civil society, United Nations and Kenyan government reports, documents, and websites. I found the following documents particularly useful: the UNDP (www.ke.undp.org/); UN habitat, UNEP (www.unenvironment.org); NEMA (http://www.nema.go.ke/); the Ministry of Environment and Natural Resources (www.environment.go.ke/); AWSB (http://awsboard.go.ke/) and FOCP (http://friendsofcitypark.org/).

On my arrival in the field, I was able to gain access to additional official documents, such as field plans, maps and meeting minutes, with the assistance of NEMA, Ministry of Environment and Water Resource Authority (WRA) officials. These documents helped me further identify key partners and stakeholders, project contacts, implementation plans, funding details and progress reports on the river restoration projects. The FOCP also provided their meeting minutes, workshop participant lists, research results, news reports and stakeholders list. This was particularly useful in helping me meet my research objectives by identifying key stakeholders, providing context (as described in chapter two), and understanding background and on-the-ground information. Document review was a relatively inexpensive process for me and provided valuable information and guided my case selection as well.
3.3.2 Participant Observation and River Walks

Participant observation “involves getting close to people and making them feel comfortable enough with your presence so that you can observe and record information about their lives” (Bernard, 2006, p. 342). Participant observation is a very useful data collection method because it allows critical examination and studying of participants and the activities, they are engaged in. During participant observation, the researcher becomes the instrument of data collection and analysis through their own personal experience (Bernard, 2006).

I was engaged in participant observation and river walks during the first few weeks in the field, to help me create rapport, familiarize myself with the communities and rivers that are part of the basin and to verify information gathered through document review. According to the literature (e.g., Bernard, 2006), participant observation is a very useful method for building some level of connection with participants, understanding their lives and setting the context of the research, all of which I found to be true, especially regarding issues of context. I observed my participants as a participant observer. Bernard (2006) describes a participant observer as an outsider who observes and participates in some activities that she/he is researching and records what she/he can. Bernard indicates that participant observation of this sort should reveal real, unbiased data. As a participant observer, I was able to experience the lives of my participants and observe them as they engaged in restoration activities. Observations were recorded as jottings, sketches and field notes.

River walks were undertaken along three rivers: the Nairobi River flowing within the Central Business District (CBD) and Kariobangi area; the Ngong River flowing within Mukuru and Kibera slums; and the Kibagare River flowing within the Nairobi City Park. Each river walk lasted for about an hour and followed the guide in Appendix 1. The first river walk, held on the 4th May, 2018, along the Kibagare River within the Nairobi City Park, was with four participants – members
of Nature Kenya, Nairobi City Water and Sewerage Company (NCWSC), FOCP and a Nairobi City County (NCC) official. We walked about 5 km following the river within the park. On May 17th, 2018, the Nairobi River was visited with 5 participants – a staff member of AWSB, a NCWSC representative, an engineer with the NCC and two members of the Water Resources Users Association (WRUA). We visited two sections of the river: upstream around the CBD globe roundabout and downstream in the area of Kariobanji. We walked along the 5 km demonstration stretch where major restoration activities had occurred.

Two sections of the Ngong river flowing through the Kibera and Mukuru slums were also visited on May 15th and June 7th with seven participants – staff members of AWSB and NCWSC, two members of the WRUA, a member of the Mukuru Kwa Kjenga youth group and two security officers. We also visited the Nairobi Dam during this visit.

I also attended and observed at several FOCP organizational meetings, and even the master plan workshop held with stakeholders. During these events I was watching for stakeholder interaction, people’s involvement in activities, salient reactions to river restoration activities and comments made during meetings. Information gathered through participant observation and river walks also helped me identify a few participants for interviews.

### 3.3.3 Semi-Structured Interviews

Interviews as a data collection method help provide knowledge other methods might not access (Hay, 2008). They help the researcher spot relevant information and allow participants to express their opinions in their own words. For the purpose of my research, semi-structured interviews were used. Semi-structured interviews are a qualitative data collection method that provide a balance between a completely structured interview style and an unstructured style. For my semi-structured
interviews, I prepared fully worded, open-ended questions designed to be used in a flexible manner (see Appendixes 1-3) that allowed me to explore themes or responses further, and I did not limit participants’ responses (Hay, 2008).

This interview technique allowed me to engage in discussions with my participants and investigate restoration activities and their involvement and experiences. This approach was very flexible and gave me room to engage my participants in a conversation, which helped to increase rapport between my participants and me, thereby encouraging them to answer questions freely and openly. I personally like semi-structured interviews because, although a set of predetermined questions were designed, I did not have to ask the questions in a specific order and I was able to supplement them depending on the discussion. I was also allowed to skip questions that were not relevant to a particular interviewee and create new questions based on the responses that an interviewee provided. The flexibility of the semi-structured interview made it well suited for my research because I was able to gather data in a free and non-restrictive manner.

The initial stage of my interview process involved identifying potential participants and establishing contacts. I selected my interview participants using purposive sampling, also known as selective sampling, a type of non-probabilistic sampling (Tongco, 2007). “Purposive sampling is described as a random selection of sampling units within the segment of the population with the most information on the characteristic of interest” (Tongco, 2007, p. 1). Following this, participants were selected to be representative of the key informant groups involved in the river restoration project: project partners, community groups and individuals. In the first instance, I used my document review for identifying key government stakeholders and local participants. After I identified a few participants, snowball sampling, also known as referral sampling, was used to identify other people to interview. Snowballing is a technique for finding research participants in
which one participant suggests someone they know and then that person suggests someone else, and so on (Atkinson and Flint, 2001). Participants were selected based on their knowledge and closeness to ongoing river restoration projects. They were mostly project coordinators, government officials, organizers, individuals, stakeholders or funders actively involved in river restoration in their communities. Key stakeholders and individuals also suggested other participants who had adequate information on the research topic.

Once I had selected a few potential participants, I proceeded to email to arrange visiting their offices. I found office visitations and referrals most effective in contacting participants. Once I recruited participants, I introduced myself and established rapport, requesting an interview date. After due protocol was followed, which involved submitting official interview requests, ethics clearance and research permits, an interview date was set. I started my interview process with the NRBP partners as they were the most difficult group to reach and required due protocol be followed. Participants willingly referred me to other project partners.

Following the same process, I then began to conduct interviews with the KRP partners and various involved individuals. I identified most of my Kibagare participants in stakeholder meeting minutes and from those that attended and guided walks that I had participated in.

A total of 35 interviews were conducted while I was in the field: eight interviews with NRBP partners, nine interviews with KRP partners and 18 with individuals involved in some way in the restoration projects, including members of the WRUA and park users (see Table 3.2). The NRBP partners included: UNEP, Ministry of Environment, NEMA, the Africa Development Bank, AWSB, NCC and the WRA. The KRP stakeholders included FOCP officials and other stakeholders (see Table 3.2). Individuals interviewed included a diverse group of people from
different demographics, such as two WRUA members, five females and 10 males. Six individuals were aged 18-25, seven were 26-34 and five were between the ages of 35 and 55. Occupations of individuals ranged from park security officers and government officials to trade workers, self-employed and unemployed people.

**Table 3.2: Compilation of interview participants in both cases** (including NRBP partners, KRP stakeholders and individual participants)

<table>
<thead>
<tr>
<th>NRBP partners</th>
<th>KRP stakeholders</th>
<th>Individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 UNEP official</td>
<td>2 FOCP officials</td>
<td>2 WRUA member</td>
</tr>
<tr>
<td>1 NEMA official</td>
<td>1 Consulting officer</td>
<td>6 Females</td>
</tr>
<tr>
<td>2 NCC officers</td>
<td>2 National Museum of Kenya (NMK) officers</td>
<td>10 Males</td>
</tr>
<tr>
<td>1 AWSB official</td>
<td>1 Planning Systems Services officer</td>
<td></td>
</tr>
<tr>
<td>1 WRA official</td>
<td>1 World Bank rep</td>
<td></td>
</tr>
<tr>
<td>1 Ministry of Environment official</td>
<td>1 NCC officer</td>
<td></td>
</tr>
<tr>
<td>1 Africa Development Bank official</td>
<td>1 I and M Bank officer</td>
<td></td>
</tr>
</tbody>
</table>

Interviews with project partners were held at their various offices and lasted for an average of 45 minutes each. Most individual interviews lasted about 30 minutes and took place at the individuals’ offices or in City Park. Kenyan and University of Manitoba ethics approved consent forms were administered prior to commencing interviews (see Appendixes 7 and 8). Twenty-five interviews were audio recorded with participant consent, and 10 were recorded with detailed notes. Interview participants consisted of 33 Kenyans and two Canadians living in Kenya, of which 23 were male and 12 were female. Data presented in this thesis using participant interview extracts are identified by interview number and organization represented. For individuals, transcripts are simply quoted as ‘individual participants’ to ensure participant confidentiality.
3.3.4 Focus Group (Workshop)

Focus groups involve a small group of people (6 – 10) discussing a topic or issues defined by the researcher (Cameron, 2005). By creating an environment for free and open communication amongst participants, focus groups can be used to generate more data and produce more knowledge than other methods. This was an opportunity to gather some participants in an informal environment and create discussions among them.

A workshop style focus group was conducted at the end of the research to discuss some key themes identified during the interviews. The workshop, which lasted just over two hours, was held at the Bowling Green Alley within City Park. A total of 10 participants, who were a subset of interview participants, attended the workshop (see Table 3.3). This was an opportunity for stakeholders working on different aspects of river restoration to meet and have good discussions. I facilitated the process using sticky notes and flip charts, which also provided a record of the data that came out of the workshop. Kenyan and University of Manitoba ethics approved consent forms were administered prior to commencing the workshop (see Appendixes 7 and 8). The workshop was also audio recorded with due consent from all participants. A workshop summary was also sent to all participants.

Table 3.3: Compilation of workshop participants

<table>
<thead>
<tr>
<th>Workshop Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 member of FOCP</td>
</tr>
<tr>
<td>5 Individuals</td>
</tr>
<tr>
<td>1 National Museums of Kenya (NMK) official</td>
</tr>
<tr>
<td>1 NCC official</td>
</tr>
<tr>
<td>1 WRUA members</td>
</tr>
<tr>
<td>1 WRA official</td>
</tr>
</tbody>
</table>
The workshop started with a summary presentation of my findings to that point, and I then led the group through a series of questions to generate discussion (see Appendix 6). We engaged in an activity at the end where the participants were divided into three groups to discuss three broad themes that stood out during the workshop, namely social learning outcomes, river sustainability management and public engagement and participation.

3.4 Data Analysis

Data analysis in qualitative research is a process of managing words to create rich descriptions and a better understanding of the data gathered (Walker and Myrick, 2006). As applied in my research, all interviews were transcribed and coded using using the QSR Nvivo, a qualitative data analysis software package. I transcribed recorded transcripts verbatim, a copy which I sent to each participant to confirm the information recorded and notes taken. Some participates gave consent to be quoted directly while some provided pseudo names and others refused, and this was incorporated in my data analysis. Interview data was also analyzed according to the participant group. The Nvivo software was very helpful in reducing, organizing, managing and analyzing the data gathered. Selective coding was used to analyze the data. Strauss and Corbin (1990, p. 116) define selective coding as “the procedure of selecting the core category, systematically relating it to other categories, validating those relationships, and filling in categories that need further development”.

To begin data analysis, I generated codes and themes as guided by my review of literature on river restoration (e.g., Woolsey et al., 2007; Lee and Choi, 2011; Wohl et al., 2005; Jahnig et al., 2011; Smith et al., 2016; Feld et al., 2011; Smith et al., 2014), social learning (e.g., Petts, 2006; Muro and Jeffery, 2008; Schusler et al., 2003; Mostert et al., 2007) and public participation (e.g., Stewart and Sinclair, 2007; Sinclair and Diduck, 2001), as discussed earlier in chapter two. I then began
coding my transcripts following these themes. Other sub-themes were developed to adequately understand and categorize the data accordingly. Key themes grounded in the data collected on river restoration include: motivations, progress and success; public participation include: levels of involvement, kinds of consultation, information communication, access to information, fair notice and dialogue and inclusion in project planning and implementation. Themes generated on social learning opportunities and outcomes include: deliberation processes, acquisition of knowledge, communication of ideas, opportunities for discussion and open communication. The Nvivo software further helped me find patterns and linkages between findings gathered.
CHAPTER FOUR – ESTABLISHING THE CASES

4.1 Introduction

Detailed background research on my cases began during my literature review (chapter two) before I went to Kenya, and continued in the field through reviewing documents accessed from websites and officials of the Ministry of Environment, AWSB, the UN and NEMA. These sources provided grounded information and deep insights on the cases. Interviews, river walks and the workshop I carried out also allowed me to triangulate the data I was collecting on the case. In this chapter, I offer a detailed description of each case, focusing on project background, implementation, challenges, barriers and success evaluation, based on the data gathered.

4.2 Nairobi River Basin Rehabilitation and Restoration Program (NRBP)

The Nairobi River Basin is situated in Kenya and consists of three main tributaries, namely the Nairobi, Ngong and Mathare rivers. The Ngong River issues from the Ngong hills in Karen, passing through the Ngong forest and downstream Kibera slums. The Mathare rivers flows from Muthahili through the Mathre slums, Kariboanji and flows into the Nairobi river. Smaller tributaries, including the Kibagare, Karura, Kirichwa, Ruaka, Kamiti and Ruiru rivers, feed into the Nairobi River as shown on the map below (Figure 4.1). The rivers flow east and join the Athi River, which flows to the Indian Ocean (IRF, 2018). The Nairobi river has a total length of 390 km, covering a watershed of 70,000 km² (IRF, 2018) and flowing through cities and towns, the capital and the countryside, collecting sewage, agricultural discharge, effluent and urban runoff as it flows (Gichuki, 1979). These contributing pollution sources further increase river degradation, and hence the implementation of the NRBP (Tibajuka, 2007).
During my river walks and participant observation along the Nairobi River flowing through Kariobanji, I noticed dead animals, lots of garbage, especially plastics, and human feces in the river. The offensive smell from the river was also hard to ignore. Despite being a river bank, there was a garbage dump site along the bank, and a mechanic shop with tons of junk car parts was also
onsite. Informal settlements along the river bank were also observed. This showed that many people gain their livelihoods along the river bank, hence the many challenges discussed in subsequent sections associated with rehabilitating the river basin. The sewers along the river bank were cut off due to a bridge constructed years ago, so there was visible sewer leakage into the river (see Plate 4.1). It should be noted that my meetings with NSCWC and AWSB officials revealed that the rehabilitation of the sewers long this river has been commissioned. Many participants described the rivers as “dirty, smelling and an eyesore”. The Ngong river flowing through Kibera and Mukuru slums had similar features – foul smell, open sewers, lots of garbage and informal dwellers. The Mukuru river in particular had a terrible green appearance due to the close proximity of industries.

**Plate 4.1: Section of the Nairobi River flowing through Kariobanji (Source: Regina Sobowale, May 2018)** Red circle shows broken sewers discharging into the river.
4.2.1 Project Background and Motivation

As explained earlier in section 2.8, the NRBP was initiated in 1999 by UNEP in collaboration with the Kenyan Ministry of Environment to address the problems arising from river pollution (UNDP final report, 2014). Pollution levels in Nairobi River Basin had increased greatly as a result of accumulated untreated sewage and uncollected garbage, and action was needed (Kithia, 2012b; Musyoki et al., 2013).

A prime motivation for the UN to initiate the project was the location of its headquarters in Nairobi and the goal of helping the city where its headquarters is housed. The UNEP initiated the project to inquire into Nairobi River Basin management, pollution control and rehabilitation techniques. As one interviewee described:

United Nations environment program is a global authority on environmental issues; we raise the flags where we feel environmental issues need to be considered. Nairobi being our national headquarters, it’s not appropriate that we can raise flags elsewhere in the global world but our own backyard is suffering. So, the proximity of the headquarters to the city was a compelling reason why we had to do that, this proximity will be on daily contact with decision makers, that is why we came forward to do this. … In terms of addressing the issues as per rehabilitation, in 1999, UNEP, United Nations environmental program, started a project more or less to find out what’s wrong with the river and what can we do.” (Interview 8, former project coordinator, UNEP).

Once the project idea was developed by the UN, a collaboration was made with the Kenyan Ministry of Environment to officially launch the project. The Ministry of Environment ran with the idea and became the frontline agency for the NRBP. The Hon. Minister John Michuki, who was the Minister of Environment at that time, was the flagbearer and political champion of the project. Interviewees mostly referred to river restoration initiatives as ‘the Michuki coordinated project’:

The main work of restoring the rivers started with the late minister Honorable Michuki, I can’t remember the exact year. That was when the restoration started. He used his authority
to make people clean up the river. One of the methods he used which was quite effective was to surcharge people who are releasing waste into the river, especially factories and known companies that were releasing waste into the river. He also went ahead to actually start cleaning the river, getting dirt taken away from the river. (Interview 14, Individual).

I think Michuki did a very good job because in terms of environmental issues within the CBD, he planted so many trees and he cleaned the river. Those trees planted will prevent soil erosion; I think it was the best way to do river restoration at that time. There was also so many dumping around the river; sewers were also tripping from building to river, so he did a good job at that time” (Interview 18, Individual).

Focusing on the deeper motivations for the initiation and implementation for this project, data revealed public demand and environmental conservation as prime factors. Public demand for cleaner rivers (Smith et al., 2016; Feld et al., 2011; Alam, 2013), ecological considerations in terms of the ecosystem services provided by rivers and increasing awareness of aquatic biodiversity have motivated many river restorations worldwide, as noted in the literature (e.g., Wohl et al., 2005; Jahnig et al., 2011; Smith et al., 2016; Feld et al., 2011; Chittoor and Schirmer, 2015), and this was also the case in my study area, as participants revealed.

- **Environmental conservation:**

Nairobi’s rivers have been in a state of despair for some time, and many felt it was important to make plans to remediate the situation. As noted in Chittoor and Schirmer (2015), water quality deterioration is a prime driver for river restoration projects. Most participants felt that the need to promote a clean environment by ensuring cleaner rivers was a major driving force for the NRBP, as stated below:

  The heavily polluted river certainly is an environmental concern. I figure it must have come to their realization that the way things were moving, it needed an intervention. I don’t know why it was neglected for so long, but it’s good that the right people came in and saw the need for the restoration program (Interview 22, Individual).

  The issues of sanitation, resource and environmental conservation and the overall quality of environment is very prominent in Kenya … hence it was important to implement this
The word Nairobi is a Masai word meaning a place of cool water. That in itself shows we have a great potential. The name does not match right now. The government was trying to bring the river to its original place. It should be a clean river. Its biodiversity is low. Some species only show up when biodiversity levels are good, the African black ducks Anas sparsa for example is only visible when it rains. When its filthy you don’t see those birds. There was also the need to eradicate waste especially along the Michuki Park before it was cleaned (Interview 22, Individual).

- Public demand:

Dienno and Thompson (2013) stated that public dissatisfaction with the lack of serenity and ambiance of the environment along polluted rivers has increased the demand for river restoration projects. Alam (2013) also found good support among residents in the Buriganaga river cleanup in Bangladesh. This was also clearly seen in this case in regards to the Nairobi River. A NCC official stated that:

There is a lot of public appeal and human cry in terms of the condition of the river. Many years back having been born in Nairobi, the river was clean, people used to go swim, but today it’s in a sorry state, so much effluent. Solid waste is a norm; also, the encroachment of the riparian area has taken a bigger part of what is available (Interview 1, NCC official).

A Ministry of Environment official supported this by saying:

The other factor obviously is that there was a bit of advocacy from civil society, people were saying the river is dirty we need to do something. There was a push for it. A number of people could see the river was getting more and more populated. This was just an intervention on trying to control it (Interview 6, Ministry of Environment official).

A member of the public also supported this by saying:

The public outcry and public concern are one reason why I think they started the project in those days, you see people went on outrage saying the river is major source of air pollution. You find out that for people living downstream, you have garbage overflowing into the river; that made the government react and respond to such issues (Interview 18, Individual).
4.2.2 Project Implementation and Status

The NRBP was to be executed by the Ministry of Environment through a ten-point strategy, including; creating awareness and assessing social impacts; undertaking a survey and delineation of the riparian reserve; stopping illegal discharges; completing work on a 2.5 km demonstration stretch; relocating economic activities and informal settlements; developing and implementing an integrated solid waste management system; rehabilitating the Nairobi Dam; repairing and installing sewerage and associated infrastructure; developing a master plan for economic utilization of the riparian zone; and landscaping and beautification of the riparian zone (see section 2.8).

In an attempt to implement these strategies, other government agencies were brought on board and delegated different agendas. The NCC was to fulfil the agenda of developing and implementing integrated solid waste management to get waste out of the river, while NEMA was charged with stopping illegal discharges into the river, relocating informal settlements from the banks of the river, creating awareness of the pollution problems and assessing social impacts. The AWSB and NCWSC were put in charge of repairing and installing sewerage and associated infrastructure.

Many participants complained that this delegation led to fragmentation among agencies, multi-sectoral confusion and overlapping mandates, as many agencies are constituted to have similar delegated responsibilities, making it difficult to know which agency addresses a particular issue. One participant, for example, was not sure which agency to report a river polluter to. He had visited the NCC office and was told to check with NEMA. On his arrival to the NEMA office, he was directed to the WRA. He found this very challenging, as many agencies expected a counterpart agency to address the issue. A NEMA official also confirmed this, expressing that by its constitution NEMA, as a coordinating agency, can carry out duties, such as riparian repair, and
charge the agency a legal debt. Hence, some agencies felt is best to avoid their responsibilities, hoping they will be carried out by NEMA.

The first step in project implementation was project delegation and specific plan assignment, after which assigned agencies focused on individual works, such as sewage improvement, solid waste plans and stopping illegal discharges. The involvement of other government agencies is admirable, as it drew in diverse participants and stakeholders, and promoted a participatory approach among governmental agencies. A few NRBP partners, however, indicated that the agencies worked in isolations despite their common goals, but reported their progress status frequently:

The Ministry of Environment is in charge of planning and coordination. Through the constitution via the local government act in Act 234 cap 242, the county is in charge of waste management, the county was mandated in the areas of solid waste (Interview 3, NCC official).

About the project, it was started by our former late Minister by the name of Michuki, he is late now. He started by bringing together a number of government institutions and agencies because each agency has different role that touches on the river system like the WRMA [Water Resources Management Authority] who are called WRA now, they have the mandate of mitigating the riparian area they have regulations on that. We have NEMA who are concerned with environmental pollution. At that time, we used to have local government but now we have county government because these rivers pass through many jurisdictions. There were a number of stakeholder’s involved even civil societies. UNEP was also assisting (Interview 6, Ministry of Environment official).

In terms of stopping illegal discharges, NEMA was able to identify and map illegal discharge points and as a result about 75 orders were issued to main polluters to stop their discharges, of which a few did (NEMA official, Interview 4). A public awareness and communication plan about the restoration project was also implemented by NEMA with the aid of sociologists, who went into communities to educate and inform members about the river rehabilitation process, the benefits of maintaining a clean river and how the process of restoration might affect their livelihoods.
As expressed by a WRA official, the team focused on demarcating riparian land, mapping pollution points, stabilizing degraded river banks, monitoring and water quality enforcement. When demarcation was complete, it was enacted that buildings or structures should be at least six meters from either side of the river bank. The WRA also worked in conjunction with community member organizations, such as the WRUA, to mobilize community members and help in monitoring and reporting offenders.

The NCC focused on developing and implementing an integrated solid waste management system as solid waste was a major source of river pollution. One of the ways the litter situation was improved was pushing for a ban of plastic materials, such as plastic bags and bottles, in 2009 (NCC official, Interview 3). As one participant noted, “Waste materials disposed in our rivers reduced considerably after the plastic ban because plastic bottles made up most of the waste, now the rivers are clean” (Individual, Interview 18). Data show that the process of implementing a good solid waste management system to support the river rehabilitation project has been an uphill journey and is mostly stalled at the moment due to land controversies. Choosing an ideal landfill site has been a controversial issue as a location cannot be agreed on by stakeholders. There was also opposition from the aviation industry and specific political objections towards a proposed landfill site (NCC official, Interview 1). This has delayed the full implementation of this component of the NRBP’s strategy.

Sewage rehabilitation and construction, as handled by the AWSB in collaboration with the Nairobi City Water and Sewerage Company (NCWSC), is one component of the NRBP that has thrived greatly. In support of the NRBP, two sub-projects were developed targeting the sewers, namely the Nairobi Rivers Sewerage Improvement Program (NaRSIP) I and II, funded by the African Development Bank. An African Development Bank official expressed that funding environmental
projects such as this is in line with the bank’s country strategy (Africa Development Bank official, Interview 2). Decisions to finance such projects are made on a priority basis. The three main components of the projects are wastewater infrastructure, which covers rehabilitation and expansion of the sewerage system, sanitation, hygiene and social environmental support through awareness campaigns, as well as institutional support and program management (Chanda, 2010, AWSB, 2017).

Notable outcomes of NarSIP I include the construction of ablution blocks in informal settlements (see Plate 4.2), some of which I was able to visit in the field. As well, the rehabilitation of the Kariobanji sewage treatment plant has progressed (55% complete), the Dandora sewage treatment plant was completed with an additional treatment capacity of 40,000 m$^3$, and 3.3 km of trunk sewers and 43 km of reticulation lines were also completed (NARSIP report, 2016; AWSB official Interview 7). A steering committee was formed in collaboration with the Ministry of Environment, MWI and Nairobi City Government to oversee, monitor and facilitate project implementation; it should be noted that although this committee still exists, it did not fulfill its mandated role, this in turn affected the timely acquisition of wayleaves$^3$ and further completion of NARSIP I (NaRSIP report, 2016; AWSB official Interview 7).

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$^3$ Wayleaves are the permission or access to property granted by a property owner.
During my field trip, discussions with AWSB officials revealed that the NaRSIP II will commence soon, and that it will focus on the rehabilitation and construction of more trunk sewers. In preparation for this, rivers requiring trunk sewer rehabilitation have been handed over to construction companies. I was able to attend three handover meetings, including the Kibagare trunk sewer construction handover for the rehabilitation of sewer line crossings at the Ruaraka and Nairobi rivers. During this meeting, AWSB officials showed the contractors the broken sewers, discussed possible engineering mechanisms to fix the sewers and signed the contract documentation. An agreement was then reached that each construction company will provide their quotation for the contract, after which funds will be awarded. Sewer reconstruction in these areas has since begun.

Rehabilitating the Nairobi Dam was also one of the strategies to be met; however, not much work has done in this regard. This was confirmed on my visit to the dam, where I found it in a dilapidated and nonfunctional state (see Plates 4.3 and 4.4). Recent research carried out also noted a reduction in biological oxygen demand for the Nairobi, Mathare and Ngong rivers at sites where trunk sewers
were repaired (NaRSIP I report, 2016). The study also noted that while the biological oxygen demand values of the Dandora Sewage Plant had been considerably reduced, it is still above the baseline value of 57mg/L (NaRSIP I report, 2016).

**Plates 4.3 and 4.4: The state of the Nairobi Dam during my field trip (Source: Regina Sobowale, May 2018)**

![Image of the Nairobi Dam during my field trip](image)

The most pronounced and visible implemented strategy I saw was the successful completion of the 2.5 km restoration demonstration stretch of the Nairobi river, which has now reached 5 km in length. The idea behind this demonstration was to start to show people the benefits of a clean river, and more so the possibility that this could be achieved, which was why a centralized and visible site in the City of Nairobi was chosen (Interview 8, UNEP official). The demonstration stretch was carried out on the Nairobi River flowing through the CBD, along the Kipande road, also called Tao. Thousands of commuters pass through this location enroute to their daily activities. This area was a stinking dumpsite and notorious for petty theft before it was transformed to a clean, presentable and safe area. To achieve this, the first action was to remove all waste materials from
the river through several participatory rivers cleanup exercises involving government agencies, CBO’s, NGOS’s, street boys and other interested individuals. Some of the street boys and other youths were employed to clean the river and report any illegal dumping. The trunk sewers around this area were also fixed and trees were planted to beautify and improve the aesthetic value of the riparian zone. This transformed site was named Michuki Park in honor of the late Hon. Michuki who had spearheaded and championed the project. During my field trip, I found the river still clean as described my participant below. I will say it was one of the cleanest stretches of river visited.

Looking at most of the river banks, the evidence is still there. If you look at the forest behind the museum here, there is a river and a forest called Michuki Park, it was filled with garbage, now it has trees and the environment has changed, but at that time the rivers were very clean and that area is still clean (Interview 14, Individual).

Relocating informal settlements has been an uphill battle and has proceeded without much success as it has been difficult to demolish existing structures, lay sewer pipes, convince existing residents to relocate and control the building of new structures. To convince exiting residents, several meetings are held to educate and convince residents and bring them on board. This has been a very challenging process.

How we do it is that within our organization, we have a social team with trained sociologist. Our entry point is the community leadership like chiefs or community leaders. The local leaders like the chiefs then introduce us to other leaders who are influential in this community. Through the chiefs and leaders, meetings are called for; once people have gathered, we introduce ourselves and explain our service plan, its benefits to them and our requirement. We access the laying plans and check who will be affected. We also tell them anyone that will be affected will be compensated. Once they understand we send the surveyors who go to check the area and value the property so we know how much we might compensate them (Interview 7, AWSB official).

At the time this research was conducted, data clearly revealed that although several works have been done in the past on the NRBP, the project as a whole has lost traction over time. The only
active component during the field work was the NaRSIP. It was indicated that this was mostly happening because of the African Development Bank funds received. Below are some of the reflections of participants on the current status of the project.

I will tell you the project has really deteriorated. That time the rivers were getting cleaner, we were really making progress but after that things have deteriorated again. There is a lot of vested interest in the river (Interview 14, Individual)

During that time, oh my dear it was very beautiful. But you see now it’s a sorry case, nobody even thinks about the river or remembers it. Even we that remember it we don’t have equipment. We are just waiting, hopefully they will remember again (Interview 27, Individual).

To me as far as I am concerned, in terms of the traction we had, I think the project is dead but not buried. Ok let me say the project is in a coma, I mean the elements are there and there is no need to do any new research anymore. If anybody needs research on the river, we have it. What people need to do it now is strategy. In fact, I tell people do a business plan, what is it you want the riparian land owners to benefit from, how can you utilize the river, how can you regulate the flood regime, how can you improve the solid waste, those are the things we need to look at. To me it is in a coma, if it’s a matter of revamping it need that (Interview 8, former project coordinator, UNEP).

The president of Kenya, however, made a declaration in April 2018 to revamp the Nairobi River Basin through the Nairobi Rivers Regeneration Project. This is a newer project just in the beginning stages, hoping to achieve an even bigger impact on the Nairobi River Basin. Details and plans of this project are not yet known. It should be noted that communication in this project is following the same style as the NRBP in terms of declarations and press releases of expected ideas, with no further detailed information (see Figure 4.2).

The older project seems dead to me, it died with the late minister. Now the president is trying to revamp it and calling it regeneration project. But the Michuki area was a big achievement (Interview 4, NEMA official).

I know it somehow died a little bit; when it was started the minister in charge of environment was very aggressive and assertive. He pushed for that and all the initiatives like the physical cleanup, tree planting, reclaiming river bank areas. The rivers became reasonably clean. But when he left, the program didn’t proceed as it should. I know it is
being revived once more. I know under the country they are trying to come up with a new one they are calling regeneration program. So it is reviving in other ways (Interview 7, AWSB official).

Figure 4.2: Nairobi River Regeneration Project press release (Source: NEMA website, 2018)

4.2.3 Perceptions of Project Success

As discussed above, project implementation entailed a variety of works; however, it is important to consider perceptions of the success of the project. Section 2.5 detailed the considerations in evaluating the success of river restoration projects, including subjective and objective parameters (Jahnig et al., 2007; Palmer et al., 2005; Woolsey et al., 2007). Subjectively, river restoration can be considered successful based on an increased satisfaction with public space and scenery. If the community is satisfied with new imagery and views along degraded rivers, the river restoration
can be termed successful. Public support and satisfaction with restoration initiatives is very important (Alam, 2013; Lee and Choi, 2012); therefore, subjective parameters and considering public views are very useful when evaluating the success of river restoration projects.

Focusing on subjective parameters, which rely on perceptions, preferences, and sense of landscape scenery and public satisfaction (Palmer et al., 2005; Woolsey et al., 2007), I asked my participants their perception of the project’s success, their responses are grouped and presented below.

- **Project partner satisfaction:**

Most participants indicated they were satisfied with project planning; agency delegation and the completed demonstration stretch. They were also pleased to have public support. Below are some of their responses.

  There is some element of success, in terms of awareness is also coming in; we are also getting public support – like people identifying with us properties or offenders who need follow up in terms of enforcement. We are also creating awareness so people know things should not be done that way. People appreciate that instead of doing what we normally do, can we do it differently. … Secondly people taking upon them to improve especially in terms of discharge of liquid waste into the river, in terms of controlling sources (Interview 1, NCC official).

  In terms of planning I am very satisfied, even though at some point I realized my institution was not the best custodian for those plans, because we are a transit organization. … Successes were registered from the pilot activities where we proved that it could be clean; we proved that there is public willingness to work on it (Interview 8, former project coordinator UNEP).

It should, however be noted that project partners expressed their dissatisfaction with project pace, timing and level of implementation. They noted that many aspects of the project could have been improved.

  But then in terms of policy, we did not succeed because the policy entails finding out how we can segregate the waste, how can you enforce laws that stop the dumping of waste into the river, how can you provide infrastructure that will make sure waste generated will be
collected in a good way, how can you bring in completer lifecycle analysis, in terms of cradle to grave type of analysis to ensure due diligence and due care in management. That policy side is what has really failed (Interview 8, former project coordinator, UNEP).

Solid waste/relocation is far behind expectation (Interview 3, NCC official).

The project is good, plans were good but implementation suffers a bit (Interview 4, NEMA official).

- **Public satisfaction:**

  When asked about their opinions and level of acceptance of the project, participants expressed their excitement about the idea of having clean rivers; this sentiment is in line with the literature that suggests substantial public support for river restoration (e.g., Thorp et al., 2010; Tunstall et al., 2000). The public, however expressed their displeasure with how the project was run, and more so with the outcomes as they had expected a larger impact on the basin and more progress to be made. Some also noted that they are simply unaware of project status, and hence it is difficult to express any level of satisfaction. Participants were mostly dissatisfied that there were still many open sewers in Nairobi, some even expressed feeling the NSCWC as an agency are not doing their job, especially because industries still discharge their waste into the rivers and regulations are not enforced. Examples of these sentiments are noted in the quotes below.

  The truth is the situation is still the same. There is no impact. I don’t think the project made any impact. The river is still dirty. The Michuki area looks nice but it was not a sustainable approach. You can’t just do a small section where people can see and not focus on the source. You have to fix the sewers and stop industrial discharge. It was an impressive attempt but in the bigger picture it was just a legacy project statement. He could have done better, but the river is still bad. If they can build a nice railway, they can clean the river. Sincerely, I have been to several meetings and met many experts. I think the government is missing out on this. People have the skill, knowledge and capacity to implement these initiatives. The government should find a way to partner with these people. This won’t undermine their power to implement. The partnership gap should be fixed (Interview 18, Individual).
The Nairobi City Water and Sewerage Company are the major polluters, you see these industries are still discharging their waste into the river, the sewers are not fixed, it still smells apart from the small Michuki site, so to me they have not done anything (Interview 33, Individual).

I might be able to speak from what I have seen, because I used to pass along the Nairobi River to school. There is a section around downtown and I can see the improvement (Interview 22, Individual).

I am satisfied to some extent but you see the program never went for long so it’s hard to say much, I expected better, because the water is still not clean (Interview 28, Individual).

4.2.4 Project Challenges and Barriers to Implementation

Project implementation was faced with many challenges, as discussed by participants; however, detailed data analysis identified three major challenges: relocating informal settlements, funding and commitment from project partners.

- **Relocating informal settlements:**

  Relocating informal settlements proved to be the most difficult and challenging process of NRBP implementation due to many factors, including cost of compensation, conflicting laws, public resistance, finding suitable relocation sites and fear of loss of livelihoods. Informal settlements along the river are one of the major polluters of the river; however, most inhabitants of these settlements believe they have the legal right to reside as close to the river as they please. This misconception results from conflicting laws and regulations. For example, the Survey Land Act states that the owner of a property owns the land and can build as close to the river as they please (NEMA official, Interview 4); however, the Environmental Management Coordination Act states the building structure must be at least five meters from the river. This has resulted in several court cases; decisions regarding such cases are settled using the latter act requiring a setback from the river (NEMA official, Interview 4).
It is a big issue to relocate individuals who have encroached to the rivers, even if you successfully relocate individuals, how do you restore their livelihoods? (Interview 3, Individual).

The main challenges were people who did not listen. I mean look at avenue road, people-built houses on the rivers and near the sewers. There is nowhere for people to pass or for the government to do anything (Interview 26, Individual).

For other individuals living along the river, and who have lived in that location for a long time, some for their entire life, they work, go to school or gain their livelihoods within that community and cannot imagine their life in another area, making it very tough to convince them to relocate (NCC official, Interview 1). Informal settlement along rivers also affects the laying of trunk sewers as the areas where pipes will be laid have been occupied, meaning demolition is then required and this is often difficult for people to accept. The cost of compensation was also a really big issue, as expressed in Interview 4, more than 40% of funding secured was used to compensate informal settlement dwellers.

- **Funding:**

As noted by participants, funding was a major challenge in project implementation as it was difficult to allocate and raise funds for this project. Both NSCWC and AWSB officials noted the difficulty in funding sewerage reconstruction and rehabilitation. This has hindered the speed of sewers works to be constructed within the city. Budgetary allocations for sewer improvement are low, and they often rely on third party funding such as the funds secured from the Africa Development Bank. The same challenge was noted in the literature (e.g., Bernhardt et al., 2005; Kondolf et al., 2007; Prior, 2016; RRC, 2013) as restoration projects require large financial resources and ongoing funding. The United States, for example, spent an estimate of one billion dollars yearly on river restoration between 1995 and 2004 (Bernhardt et al., 2005). Approximately
82% of projects in the California database on river restoration reported a total cost of more than $2 billion within 25 years (Kondolf et al., 2007).

The major challenge is budgetary allocation, even when you engage the county, they always tell you there is no budgetary allocation, they tell you there is no money to do it. Michuki actually succeeded during his time because he usually gives heavy fines and penalties to offenders. So, it’s either you repair it or you continue to pay penalties. So, he was able to fix these problem areas, but it’s as though we have gone backwards again (Interview 14, Individual).

Financial commitment from partners is also a challenge. It is difficult to sustain commitments of individuals at the table (Interview 5, WRA official).

You see when we agree and we want to go and implement, the financial resources are lacking, then you go back and talk again. That’s why I think if the government has put aside eight million, it should go beyond that but they should put it in policy formation and create something binding for Nairobi River. They can establish the Nairobi River Basin Authority to help to direct the cleaning of the river (Interview 8, former project coordinator, UNEP).

- Commitment from project partners:

Stakeholder collaboration and commitment is key to the successful running of a river restoration project as good lines of communication and a dutiful attitude are necessary (Speed et al., 2016). The literature suggests that river restoration projects require collaborative efforts among partners and likeminded stakeholders to facilitate and guide decision making, planning and implementation; if this is lacking it can affect the smooth running of the project, as seen in this case (Lee and Choi, 2012; Speed et al., 2016; Lovett and Edgar, 2002). Bringing stakeholders on board, creating synergy and getting them to continue to do their jobs was very difficult in this case (WRA official Interview 5, NCC official Interview 3). This was a common concern raised by most project partners, as exemplified in the following quotes.

For any river rehabilitation project, a major challenge is the responsibilities of water bodies amongst the relevant authorities. It is spread out on different acts, bodies and agencies. It
is very fragmented with the risk of things been lost as proper coordination is lacking. As an example, there are more than 77 acts with the purpose of safeguarding the Nairobi Dam, yet the dam is in its poorest state today. It is biologically dead. This shows the fragmented legislation and responsibility of the relevant agencies (Interview 16, Planning Systems Services official).

Lack of cooperation; people do not come for meetings. People or some organizations or agencies do not do what is expected. People are generally difficult and are not willing to be led. People just don’t do their jobs. It is the requirement of the law that if the main agency does not carry out its responsibility, NEMA can carry it out and charge agencies as a legal debt, so they just tell us to do it and charge them instead of carrying out their duties. This is difficult for NEMA because we don’t have funds or capacity to carry out many projects, if everyone does their job as at when due things will work (Interview 4, NEMA official).

4.2.5 Future Expectations

Interviews with participants also focused on understanding their future expectations for the Nairobi River Basin in light of the NRBP. Questions centered on understanding participants’ hopes and desires for the Nairobi River Basin. Many participants expressed hope for cleaner rivers, rivers with portable water, an improved aesthetic in the river environment and increased biodiversity along the river in the near future. In addition to this, some participants also expressed the need to promote a sustainable approach to river restoration in terms of education, addressing pollution sources and reducing short terms efforts such as river cleanups.

For starters, a clean river; I also want river restoration policies for riparian protection. All the pollution comes from people, industries and the absence of sewers; not just river cleanup gatherings (Interview 19, Individual).

For me, what I want it to achieve is that in every stream of water when you pass if you thirsty you can drink the water or use it anything you want. If you find yourself exhausted you can go the river and relax (Interview 18, Individual).

I will only be proud, I don’t know if I will ever be, but I will have been proud if the entire stretch of the river was like Michuki Park (Interview 6, Ministry of Environment official).
4.3 Kibagare River Restoration Project (KRP)

The KRP is spearheaded by an advocacy volunteer group called the Friends of City Park (FOCP). The FOCP was established in 1996 and was formed under Kenya’s oldest conservation group, Nature Kenya (Interview 9, FOCP member). Like the name suggests, the FOCP are a group of people who dedicate their time and resources to protecting City Park voluntarily. The park, which is located on Limuru Road, is a green space managed by the NCC and is widely known for its indigenous forest and Sykes’ monkeys. Like most green spaces, there have been issues of land grabbing, deforestation and mismanagement, and the FOCP works to continuously manage and protect the park. They aim to get 60 hectares declared a National Monument under the Government of Kenya’s National Museums and Heritage Act (No. 6 of 2006) (FOCP, 2018).

The group is mostly involved in organizing guided nature walks and regular cleanup activities, gathering public support for key issues, training youth, preserving the park and its environs, engaging with other partners and stakeholders and mobilizing community engagement (FOCP, 2018). The FOCP have as their first priority conserving the park, and cleaning the river that flows within the park is a secondary consideration. The Kibagare river flows from the Kibagare slums through City Park and joins the Mathare River. The river runs for about 1.7 km within the park (Revive Solutions, 2016). This river, like most rivers in Nairobi, is heavily polluted and practically an open sewage system. During my river walk I observed much plastic garbage in the river, and some sections also had a foul smell. As part of one of the initiatives to protect and preserve the park, the FOCP initiated the KRP, focusing exclusively on the section of the river flowing through the park (see Plates 4.5 and 4.6).
4.3.1. Project Motivation

The motivation for the KRP is more or less a secondary consideration – because the river is located within City Park it fits into the broader plans to regenerate the park, and so it was imperative to also focus on cleaning the river to improve the aesthetic value of the entire park. Public consultations carried out by the FOCP also revealed that many park users wanted the river flowing within the park cleaned, as the foul smell was a discouraging element for tourist who wanted to visit the park. In summary, the project was primarily motivated by the need for a cleaner river and park (FOCP member, Interview 10), and for environmental considerations. This is similar to the motivation of the NRBP and is noted in the literature as common for river restoration projects (Wohl et al., 2005; Jahnig et al., 2011; Smith et al., 2016; Feld et al., 2011). The following quotations from interview participants illustrate this.

FOCP is a likeminded group of individuals. We hope the river can be cleaned and be a good example to other rivers in the country (Interview 9, FOCP member).
As an organization we are motivated through our CSR setup. Our main CSR pillars are health, education and the environment … so our contribution was in terms of sponsoring the research of the river cleanup to see what really ails the river and how best can it be cleaned … also the said river flows into one of the outlets adjacent to our 3rd tower, so really from that perspective and being part of our cooperate social responsibility that we care for the environment, it was necessary that as stakeholders and neighbors of the Kibagare river we see what we are able to do to contribute to its cleanup. That’s where IandM organization came in…” (Interview 13, I and M Bank official).

4.3.2 Project Implementation and Status

The KRP initiative aims at cleaning and restoring the Kibagare river flowing through City Park.

The end goal is to clean the river bed, repair broken sewers, install permeable membranes and improve the aesthetic value of the river. Agenda 42 of the Master Plan highlights the Kibagare river restoration plan activities as listed.

Table 4.1: Kibagare river restoration project agenda (Revive solutions, 2016; Forum report, 2016)

<table>
<thead>
<tr>
<th>Agenda</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey sources and types of river pollutants and determine water quality</td>
<td>Completed</td>
</tr>
<tr>
<td>Hydrological and geophysical assessments</td>
<td>Completed</td>
</tr>
<tr>
<td>Regularly repair broken sewage points upstream</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Install permeable, cleanable screens that will trap solid waste, and ensure they are cleaned</td>
<td></td>
</tr>
<tr>
<td>Remove concrete channel and create wetland along river</td>
<td></td>
</tr>
<tr>
<td>Introduce nutrients for bacteria to assist breakdown of waste and reduce odor</td>
<td></td>
</tr>
<tr>
<td>If all above fails, introduce enhanced oxygenation systems to promote bacterial growth</td>
<td></td>
</tr>
<tr>
<td>Make City Park river rehabilitation a demonstration project for waterways restoration in all of the region</td>
<td></td>
</tr>
</tbody>
</table>

To begin the restoration, an initial study was carried out along the river bank to identify effluent points, locate them on maps with GPS coordinates, determine flow rates and collect water samples.
to conduct further testing (see Figure 4.3 for sampling points). This work was carried out by the Revive Consulting Group in 2016 and funded by the Kenyan IandM Bank. The resulting report revealed that there was a broken sewer pipe 120 meters upstream, storm water pipes entering the river and solid waste dumping sites along the banks. Analysis also revealed high levels of biological and chemical oxygen demand, nitrogen and the presence of E. coli and fecal coliform (Revive solutions, 2016).

**Figure 4.3: Sampling points for the KRP (Revive solutions, 2016)**

Upon identifying the burst sewer pipe, the FOCP communicated to the NCSWC to approve funds to fix this sewer as this will go a long way in controlling the pollution and rehabilitating the river. This was included in the ongoing NaRSIP II project funded by the African Development Bank. I had the opportunity to attend the contract handover meeting, and the project has since begun and
is ongoing. Successful completion of this project will go a long way in assisting with the river restoration.

The FOCP have constantly engaged stakeholders in developing a master plan. A wide stakeholder workshop was held in 2016 with 250 participants, including all relevant government agencies, NGO’s and members of the public, where the key agendas for the KRP were established. A follow-up workshop, which I attended during my time in the field, was held to further develop the master plan.

This project is currently ongoing, and completing the baseline survey and pushing for the sewer reconstruction is definitely a great start and good progress. For a small group, the FOCP have been able to record some impressive accomplishments, including being able to divert the Nairobi Metropolitan Services Improvement Project’s World Bank funds away from creating a concrete storage dam that would store water contaminated with sewer, and instead towards rehabilitating the existing drainage system in the park (NMK official, Interview 15).

We want to create baseline data and lobby the government to do the heavy work. We believe in our advocacy work. … The river stinks and is full of sewage. The first step was to do a study. This will guide proper implementation steps. We plan to cut off sewerage and block leaks. We lobby the government to fix the sewers, now we a see a little progress. We need to also introduce food to allow the good bacteria into the river to bring life back to it. We also plan to dechannelize the water and create wetlands. We work very closely with Nairobi water (Interview 9, FOCP member).

4.3.3 Perceptions of Success

Focusing again on subjective parameters, which rely on perceptions, preferences, and senses of landscape scenery and public satisfaction (Palmer et al., 2005; Woolsey et al., 2007), project organizers were mostly satisfied with the project design but expressed dissatisfaction with the speed of implementation. Participants were generally satisfied with the role the FOCP have played
in ensuring cleaner rivers within the community and with their collaborative efforts with government institutions to drive change and progress. While it can be concluded that participants were happy and satisfied with the presence of the FOCP, many were still unclear about the river restoration project’s status and progress the group has made. Hence, it was difficult for some to express any level of satisfaction. The following quotes are illustrative of the perceptions of participants.

I am satisfied with the role FOCP has played, but the progress for the rehabilitation is slow due to lack of engagement with all stakeholders (Interview 9, FOCP member).

For the FOCP efforts I can’t really say where they are at the moment, but based on the workshop experience and knowing that volunteers signed up, I think they did some good work. I was able to see photographs (Interview 22, Individual).

In terms of what the FOCP is doing, I can support it and I am satisfied with it, I hope we are able to accomplish all we discussed (Interview 20, Park security).

I must commend the works of Friends of City Park for what they have been doing from 1996 to date. They might not have realized too much of the infrastructural development but their popularizing, talking and engaging the public has helped some lands which had been encroached to be taken back to the government. That in itself to me I count it as a very big milestone, the initiative to also be involved during the NaMSIP project which was very ambitious and very good but missed to inform the public (Interview 15, NMK official).

4.3.4 Project Challenges and Barriers to Implementation

Similar challenges were found in the data for this case as were identified for the NBRP project and as found in the literature, such as commitment from stakeholders, lack of funds and lack of government support. The FOCP members expressed how difficult their advocacy journey has been, and explained they are at a vulnerable state and have lost momentum due the many challenges they have faced. It is very common for CBO’s, advocacy groups and volunteers to feel discouraged while fighting for environmental goals (Isreal et al., 2006; Cordero-Guzman, 2004).
The FOCP members expressed frustration with government institutions in particular, as it was difficult, for example, to obtain timely support for their work, especially in areas of infrastructure improvement and response to meetings. Another barrier to implementation in this case was the commitment of stakeholders. Participants felt that since this initiative was led by a small group of volunteers, more effort was needed to raise funds, mobilize stakeholders and ensure commitment.

Well commitment is the biggest thing for me, more so commitment from everyone concerned. We are a small group, it’s one thing to say we are going to clean up the river; it’s good thing when we put hands together to see it through (Interview 13, IandM Bank official).

Our advocacy journey has been challenging. It’s been harder than expected. The government is purposefully unorganized. The government should work as it should. It’s been very difficult, there is no effective government organization (Interview 9, FOCP member).

One of the main challenges is money, when you try to get people involved and you don’t have cash no one will support you. So, you do the little you can and leave the rest for the city council to do (Interview 18, Individual).

The government needs to organize itself especially the City County. When you visit the county office you find people are disorganized and not coordinated. People don’t know what they are supposed to be doing, if they can sort that out, it can be ok for us in City Park to do our project” (Interview 10, FOCP member)

4.4 Chapter Summary

This chapter provided a description of both cases, focusing on project background, implementation, challenges and barriers and perceptions of success, based on the data gathered from participants and the documents reviewed for each case. While the NRBP was launched by the UN in collaboration with the Ministry of Environment to tackle the pollution issues of the Nairobi River Basin, the KRP was led by a small group of volunteers to tackle river pollution issues within the segment of the Kibagare River flowing through Nairobi City Park.
The data from both cases reveal that environmental considerations and public demand for cleaner rivers were major drivers of the river restoration projects. The literature indicates that these are common drivers of such projects (e.g., Smith et al., 2016; Feld et al., 2011; Wohl et al., 2005; Jahning et al., 2011; Chittoor and Schirmer, 2015). Public outcry for a clean river was also a key motivator for the NRBP partners. Palmer et al. (2005), in their synthesis paper on US river restoration efforts, stated that one of the key considerations of river restoration projects is that they should be designed through an ecological lens and should aim to improve the ecological conditions of the river systems. Such issues were incorporated into the planning of both cases as both strategies aimed at improving the ecological conditions of the rivers. The desire for a cleaner river and the need to promote best practices motivated the restoration efforts.

In both cases, project implementation was moving at a slow pace due to many common challenges, such as lack of government commitment and funding. As suggested in the literature (e.g., Bernhardt et al., 2005; Kondolf et al., 2007; Prior, 2016; RRC, 2013), funding is a major challenge in river restoration project implementation as it is often difficult to allocate budgetary funds for such high cost projects, and hence external loans or financing through government funds, loans, trust funds or support from other organizations is often required (Kondolf et al., 2007). In both cases external support funds were used, with the African Development Bank funding the NRBP while the I and M Bank supported the KRP.

In terms of perceptions of success in both cases, it was found that all stakeholders were satisfied with project plans and concepts, but were dissatisfied with the speed of project implementation due to the many barriers identified above. Many individuals, however, noted difficulty in expressing their level of satisfaction with both river restoration projects because they were unclear about the projects’ progress and ultimate aims. This implies that the level of awareness and
information regarding project plans and progress can influence participants’ perceptions of success and their overall level of satisfaction.
CHAPTER FIVE – ACHIEVING MEANINGFUL PUBLIC PARTICIPATION

5.1 Introduction

Public participation in river ecosystem management is gaining attention worldwide and is been promoted as a way to support a democratic process and increase transparency and buy-in to restoration projects (Carr, 2015; Luyet et al., 2012; Smith, 1986). Public participation involves a variety of processes intended to consult, involve and inform the public to ensure public input in decision making (Smith, 1983; Wouters et al., 2011).

Section 2.4 of my literature review establishes that public participation is very important and central to the successful implementation of river restoration projects as it builds confidence, trust, allows the continued protection of resources and facilitates learning (Alam, 2003; Schusler et al., 2003; Piovesan, 2013; Tunstall et al., 2000). In addition, the Kenyan constitution requires that public participation be undertaken by various levels of government before a decision is made, as this encourages a democratic and transparent process, which was confirmed by data gathered (Githinji, 2018; Mariru, 2018; Interview 3, NCC official).

As revealed in the literature (see chapter two) and my findings in both cases (See chapter four), river restoration projects are also motivated by public demand (Smith et al., 2016; Feld et al., 2011), and hence the need to include interested parties in restoration activities. This interest can help initiate participatory processes (Thorp et al., 2010; Tunstall et al., 2000) and it makes sense to strive for public input in all facets of restoration as plans can be frustrated if the public that wants action is not engaged (Woolsey et al., 2007).

Drawing on existing literature (e.g., Stewart and Sinclair, 2007; European Commission, 2000; HarmoniCOP, 2005), data gathered on public participation is discussed in subsequent sections.
The EU Water Framework Directive provides a framework describing the three forms of public participation. In this chapter, I focus on a detailed review of the public participation processes, methods, benefits, challenges, indicators of public participation and stakeholder analysis in both cases, as gathered through document review, interviews, and workshops.

5.1.2 Public Participation in Project Planning

Planning a river restoration project is a rigorous process that requires several inputs and the involvement of many stakeholders before it is implemented (Lee and Choi, 2012). It is best to begin public participation early in the planning phase of a river restoration project, although many government agencies struggle to incorporate this. Heldt et al. (2016, p. 4) note that “the laws dealing with the implementation of the actual projects only require formal public participation in form of information and consultation during the last approval procedures”, and as a result public participation in planning is often overlooked by many institutions.

Keeping the constitutional requirement for public participation in mind, to what extent was this carried out during the planning phase of both river restoration projects? The NRBP was planned by the UNEP and Ministry of Environment, with other government agencies involved in different segments. Data gathered on the NRBP revealed that public participation was not carried out during project planning as the project was formulated by government agencies without public input, plans were then communicated to the public for information purposes. All NRBP partners interviewed confirmed this, saying, for example:

In planning, I won't say the public was involved, very few public people were involved, actually only maybe a few civil societies were involved during planning but not the general public (Interview 4, Ministry of Environment).

The public was not involved in the planning per say, it was like a top-down approach or rather from UNEP side, we felt we have done the analysis or science; we were planning
for the pilot stage, perhaps that is an area we need to think about but we found ways to include them as the project progressed (Interview 8, former project coordinator, UNEP).

The public was not involved in planning. you see the project began way back in the mid-90s but did not have the thrust. In the 2000s it gained momentum and many institutions felt the need to commit (Interview 5, WRA official).

There was no involvement in planning. Only announcements were made, they were told the project plan, but did not know what to expect (Interview 4, NEMA official).

Although public participation was not carried out during NRBP planning, public input and engagement began during project implementation, and the mechanisms used for involvement are discussed in subsequent sections.

As for the KRP, participants reported an inclusive planning process. Key restoration plans were made by FOCP members with input from many stakeholders. A wide stakeholder forum, which was held in 2016, brought all stakeholders, including the general public, together to develop the master plan and agendas for the river restoration project. Stakeholder input was given in discussions, such as when to begin activities, how to involve government institutions, community mobilization techniques, technical suggestions on restoration plans, funding options and identifying volunteers and other stakeholders, to mention a few examples. This was also confirmed by participants, such as one of the workshop attendees:

I was invited to the stakeholders’ forum with the FOCP about two years ago in 2016. In that forum, there were many, about six key topics. One of the topics was on how to make the park cleaner. The river was discussed and we came up with a master plan (Ronnie, Interview 22).

5.2 Stakeholders Involved in Both Cases

A stakeholder is any entity that has a stake or interest in a policy (Reed et al., 2009). Gamble et al. (1995, p. 3) define a stakeholder as “all those who affect, and/or are affected by, the policies, decisions, and actions of the system; they can be individuals, communities, social groups or
institutions of any size, aggregation or level in society”. The term thus includes policy makers, planners and administrators in government, and other organizations and the general public involved in the river restoration project. The stakeholders involved in the NRBP and KRP are outlined in Tables 5.1 and 5.2 respectively.

**Table 5.1: Categories of stakeholders involved in the NRBP (UNDP final report, 2014).**

<table>
<thead>
<tr>
<th>Categories of stakeholders</th>
<th>Groups involved</th>
</tr>
</thead>
</table>
| Government agencies        | Ministry of Environment  
                            | United Nations Environmental Program (UNEP)  
                            | National Environmental Management Authority (NEMA)  
                            | Athi Water Service Board (AWSB)  
                            | Nairobi City County (NCC)  
                            | Ministry of Water and Irrigation (MWI)  
                            | Water Resources Authority (WRA)  
                            | Nairobi City Water and Sewerage Company (NCWSC)  |
| Private organizations and community groups | African Development Bank  
                                           | University of Nairobi  
                                           | Water Resources Users association (WRUA)  
                                           | Nairobi Central Business Association (NCBDA)  |
| General public             | Community leaders  
                            | Public *barazas*  
                            | Community members  |

**Table 5.2: Categories of stakeholders involved in the KRP (Forum Report, 2016)**

<table>
<thead>
<tr>
<th>Categories of stakeholders</th>
<th>Groups involved</th>
</tr>
</thead>
</table>
| Volunteer groups           | Friends of City Park (FOCP)  
                            | Nature Kenya (NK)  
                            | Friends of Arboretum (FOA)  |
Government agencies | Nairobi City County (NCC)  
| Nairobi City Water and Sewerage Company (NCWSC)  
| National Museums of Kenya (NMK)  

Private organizations | Planning System Services,  
| LandM Bank,  
| Bamps Temple,  
| Revive Consulting,  
| Premier Academy  

General public | Park users and other individuals  

### 5.3 Levels of Public Participation in Both Cases

A number of attempts have been made in the literature to develop models and frameworks to describe the levels of public participation, involvement and citizen engagement, some specifically in the context of river restoration (e.g., European Commission, 2000; HarmoniCOP, 2005; Stewart and Sinclair, 2007; Arntsein, 1969; Council, 2005). Drawing on Article 14 of the EU Water Framework Directive, public participation in river restoration projects should encompass all levels of participation, including information communication, consultation and active involvement (European Commission, 2000). Data gathered on the level of public participation in both cases is described using this three-stage model.

The first level of public participation is information communication. Information communication is the dissemination of information through various mechanisms (European Commission, 2000; Rowe and Frewer, 2000; Carr, 2015). This helps provide adequate information on project goals to assist the public in understanding the issues, opportunities for solutions and how they can be involved (Smith, 1983; Rowe and Frewer, 2000; Carr, 2015; Luyet et al., 2012; Nones, 2016; Sten Hansen and Määnpää, 2008). Communication of information is a level of public participation as it
is important to adequately inform the public about project plans and create awareness; without awareness true participation cannot occur (Kreiken, 2018). Information access and communication is also an indicator of meaningful public participation as the public should be provided with necessary information on project plans; the public should have access to project reports and know how to access such reports (Stewart and Sinclair, 2007). Such information should also be available in comprehensible languages such as English and Swahili in these cases.

The next level of participation is consultation. Public consultation and engagement include opportunities to obtain public input and feedback on project plans and prospective ideas, with the aim of incorporating public ideas into final decisions and plans (European Commission, 2000; Wouters et al., 2011). This is to ensure their concerns and desires are meaningfully considered (Luyet et al., 2012; Wouters et al., 2011; Smith, 1986; Sten Hansen and Mäenpää, 2008). Consultative meetings will provide the public influence over the project; while the public might not be able to have full control or ultimate influence over a project, elements of views aired should be incorporated into final plans (Sinclair and Diduck, 2001; Luyet et al., 2012; Wouters et al., 2011). Consultations can be carried out through town hall meetings, public hearings, workshops, oral consultations, surveys and community meetings (European Commission, 2000; Carr, 2015; Luyet et al., 2012; Wouters et al., 2011; Hansen and Mäenpää, 2008). Public written comments on published drafts can also be a form of consultation (European Commission, 2000).

While it is necessary to create avenues for discussions, it is more important to ensure the quality of such discussions. The public must be willing to participate and coercive techniques should not be applied; dialogues should be fair, safe and open (Sinclair and Diduck, 2001; Luyet et al., 2012; Wouters et al., 2011). Forums should also consist of a broad representation of the affected public. Location and timing should be convenient for the participants, and the nature of participation
should be clearly defined to avoid confusion. Participants should also be provided early and adequate notice to enable proper planning and good attendance. Participants should have a good understanding of the purpose of such meetings. These conditions allow open communication, which creates an ideal condition for learning (Webler et al., 1995).

Lastly, active involvement includes “a more involved role for the public which may include: helping to develop solutions; participating in implementation; and becoming fully responsible (for part of) river basin management” (HarmoniCOP Handbook, 2005, p. 1). Public involvement should make use of techniques for maximizing input and encouraging the expression of public views (European Commission, 2000; Council, 2005), including education, increased awareness and creating an enabling process (Luyet et al., 2012; Wouters et al., 2011). The public should be involved early in the river restoration process, during the planning phase and even before decisions are finalized. This involvement should also continue throughout the process (Sinclair and Diduck, 2001; Luyet et al., 2012; Wouters et al., 2011).

The Water Framework Directive highlights “Three forms of public participation with an increasing level of involvement: information supply, consultation, and active involvement … the first two are to be ensured, the latter should be encouraged” (Executive Summary, p. 4). Figure 5.1 below describes the relative importance of information supply and consultation. Information supply feeds into consultation, which then encourages active involvement. The lowest level of participation is ensuring access to information as this promotes an effective public participation process. Adequate information is a prerequisite for meaningful involvement of the public (HarmoniCOP, 2005). Consultation should also be ensured as a fundamental component of public participation programs.
5.3.1 Information Communication

Participants and documents reviewed indicated that the first step of public participation in the NRBP was project communication. Proposed project plans were explained to the public, focusing on expected outcomes and possible project effects on the community and environment. During this stage project plans were communicated to the general public through press conferences, media releases, including television items and newspapers, and website uploads, such as on the Ministry of Environment’s site (http://www.environment.go.ke/). The AWSB, for example, released two documentaries on YouTube to inform the public about the river restoration plans and project’s status (https://www.youtube.com/watch?v=Awm1FeWLYtw; https://www.youtube.com/watch?v=gFNmi8Wum1E). Reports on project plans were also uploaded online via the NEMA and AWSB websites. Information was also disseminated through community chiefs, barazas\(^4\), elders and community chairmen.

\(^4\) Baraza is a Swahili term connoting public meetings and gatherings.
This was confirmed by a NCC official, stating that:

> The first bit was to have a news item in terms of telling the public this is what is going on and what will be done, it started from the highest office, Subsequent to that, there has been a press conference to tell them what the project is about and telling them where we are. We actually took them physically to the ground to show some of what we found" (Interview 1, NCC official).

A member of AWSB also noted:

> We had a project communication component, which did not come early enough, but am glad it took off. We were able to make brochures issued to the public containing information about the project and FAQ, we made two documentaries which were uploaded to YouTube and did a pull out in the national newspaper explaining the project (Interview 7, AWSB official).

The KRP had a similar information communication component. The FOCP communicated initial project plans through monthly reports, notice boards, emails, flyers and via FOCP websites (http://naturekenya.org/about/friends-of-city-park/). These mediums of dissemination provided all stakeholders with the information needed to understand project plans and stay updated as implementation progressed, as described by an FOCP member below:

> You see the notice board when you enter the park, we usually post information there for people to read, it’s an easy spot. We also send weekly reports via emails to members on our list, our website is also there for people to see what is going on (Interview 10, FOCP member).

When asked about the ease of access to information on project plans, most participants mentioned news items as the easiest means of accessing information as they often heard information about the river restoration project on the news via television or radio, or from a family member who had. There were no language barriers as information supplied was in English. Some participants were also not aware that a document was uploaded on websites or that documentaries were created, and others did not know how to access information on projects due to technical difficulties. In general,
many participants critiqued the lack of information in both the NRBP and KRP regarding plans and status updates, despite the mediums mentioned above.

   One thing they are missing is awareness. We are also missing information. When reports are out the common guy does not have access to it or does not understand as it is written in technical jargons. Awareness creation is a major gap, if you are not in a particular circle of people you won’t get information or even know what’s going on (Interview 21, Individual).

Informing the public about project plans and ideas should result in a better understanding of river pollution issues, reasons for project implementation and general knowledge of the project, as well as building trust and fostering learning (Rowe and Fewer, 2000).

Public education and sensitization was carried out to enlighten people on the impacts of polluted rivers, as also suggested in the literature (Bergen, 2008). Awareness and education activities were carried out to increase environmental knowledge and build capacity for active public involvement, as described in the quotes below:

   The public was involved in the sensitization on the environmental concerns to ensure the impact of living in a polluted environment was known. This was through public education and more or less enlightening them on the laws that protect them and letting them know that in the Kenyan constitution, the right to a clean and healthy environment is available in the constitution (Interview 8, former project coordinator, UNEP).

   The public has been sensitized through the WRUA, there are quite a number of them with the rivers. They have been trained in leadership, finance and water management. They are required to protect the riparian so they can alert the WRA if someone wants to build on the riparian. They are also involved in the physical removal of waste and also in scouting (Interview 5, WRA official).

5.3.2 Consultation

During the NRBP, consultations were mainly carried out through town hall meetings in coordination with public barazas, community groups and local elders/leaders. Most community leaders or chiefs were elected or appointed by the community members while some were self-
selected influential people in the community. Elders refers to the oldest members of the community to whom much respect is given.

We normally access the public through what we call *barazas* ... we too have some leaders called chiefs, so we can call people and communicate our decisions with them ... we hold consultative meetings through the administrative structure (Interview 6, Ministry of Environment official).

River management meetings are held. Meetings also geared to livelihood improvement. These meetings are organized quarterly basis. At the beginning when developing sub-catchment management plan; we involve all stakeholders, NGOs, Kenya forest service, Ministry of Agriculture and Security (Interview 5, WRA official).

Community elders served the purpose of community mobilization and facilitation. They also served as intermediaries between the community and government officials, as talking points and interests were communicated to community members and vice versa. It should be noted that in most cases meetings were carried out with administrative community leaders first before the general public, as mentioned by NRBP partners, which was done to foster better relationships and ease the transition of public workers into the community. After initial communications with local leaders, general meetings were called for further deliberations. In some cases, consultations were carried out with community elders alone as it was believed they are representatives of the general public.

The WRUA, which is an association of water users and riparian landowners in Nairobi working together with the purpose of conserving and managing water resources, also served as an entry point for communicating the needs of their individual communities to the WRA and NCC. Interviews with the WRUA National, Kirichwa and Mukuru Chapters confirmed their involvement in community mobilization.

We have been engaging the lower level and grassroots, these areas are vast and we realize we can't issue every offender a notice so what we want to do is call a public engagement
and meeting so we create awareness on the way we want to approach the river. All rivers have the water user’s association and we want to bring them on board, once we are able to know if they are in place, we also try to consult and meet with them as well (Interview 1, NCC official).

As a group, we have been able to participate in the county government meetings, they call us stakeholders, we bring and discuss issues of concern to them in terms of sanitation, and what the community needs (Interview 31, WRUA chairman).

Interviews with members of the WRUA also revealed that, although initial consultations were done at some point, it appeared that their views had not been taken seriously or considered. The level of communication between the WRUA and government agencies leading the NRBP deteriorated midway through the project as the government no longer provided them a seat at the table or consulted them. Updates on government plans for the community rivers were then heard through news outlets and not by direct communications. This is an aspect the group would like improved upon, as expressed by a member of the WRUA:

I will really like to mention that although we had met with some government officials at some point, I don’t think they actually considered anything we said or took it seriously because they keep repeating the same concerns, for example, the waste from industries into our rivers have still not reduced, I don’t think they take our complaint seriously (Interview 32, WRUA member).

In addition, interviews with NRBP partners revealed that although consultations and meetings were carried out as a form of public engagement, the purpose was solely to inform, convince or communicate project plans, and not to seek input for decision making. This is counter to what is suggested as best practice in the literature (Carr, 2015; Luyet et al., 2012; Wouters et al., 2011; Smith, 1986; Nones, 2016; Heldt et al., 2016; Hansen and Mäenpää, 2008).

When asked their opinions on the meetings held with NRBP officials, interviewees offered mixed responses. Few attendees commended the forums and found them effective. Some also mentioned that adequate notice what not given prior to meetings being called.
I remember attending one of those meetings with some people in the Ministry of Environment in the days the project was vibrant, we were discussing cleaning the river along Kipande Road in the CBD. I attended as a concerned citizen because I also represent my landlord association and not in my official capacity, I think those meetings were really good and effective. We were able to plan and mobilize each other for the river cleanup (Interview 15, NMK official).

When you say notice, well I won’t say adequate notice, because sometimes they just tell us a week in advance and we have to start calling other members to ensure they can make it, but we have things to do, sometimes I just delegate and send Julius (Interview 31, WRUA chairman).

Many individuals expressed they had never been in any meetings or heard of such meetings, and few doubted the sincerity of such forums and meetings as the outcomes were not productive. Other individuals in attendance mentioned feeling like a checked box saying, for example:

Sincerely the only time the government was here to discuss the river, I feel they only came to here so they can tell their sponsors that they visited the community, so many people have come here to discuss the river, they only see us as a charity case and take photos, they don’t really care what we tell them, it’s very sad… (Interview 33, Individual).

In the KRP, similar kinds of consultation and engagement techniques were used, such as community meetings, visits, interaction and workshops with many individuals and stakeholders, and I too the opportunity to attend a few such meetings while in the field. In one of the meetings I attended there were five stakeholders – three FOCP members, one NMK member and an NCC official – and discussions centered around solutions to facilitate sewer reconstruction with NSCWC (Minutes 1). When asked about the kinds of opportunities for consultations and meetings, an individual responded saying:

Yes, there are opportunities for consultations such as those public meetings. For example, about a week or so ago, FOCP held a workshop and I, for one, got to learn a lot of information from there. So yes, there are such opportunities (Interview 22, Individual).

According to an FOCP member, the consultations and especially the workshop carried out were designed to gain the input and feedback of all stakeholders on river restoration plans. One large
stakeholder workshop, held in 2016, had 252 participants, for example. Data show that input from this workshop was utilized in developing the master plan and agenda for the restoration of the Kibagare river. Participants indicated that the initial goal of developing balanced decisions and identifying alternatives and solution strategies was achieved through this consultative and engagement process. Many individuals interviewed concerning the KRP commended the FOCP’s style and efforts in ensuring the continuous implementation of the project and the effectiveness of the meetings and workshops held.

I must commend the works of Friends of City Park for what they have been doing from 1996 to date, especially the way they have tried to bring us together in areas of meetings and workshops (Interview 15, NMK official).

In terms of quality of dialogue, interviews with individuals involved in the NRBP expressed their inability to communicate their views on the project status and design. Some even felt they had no control over the design plans, and would like to be able to share their views (Individuals; Interviews 25 and 32). One participant mentioned: “I don’t think we have any say; you see it is the Ministry’s project, actually it was Michuki’s project, they are running it as they want” (Interview 32, WRUA member). Few participants interviewed in the KRP had opposing views, they said they believe the park belongs to them, and since the FOCP are trying to help, they actually listen. A park user said:

We have control over this project, it is our project, the FOCP can’t do what we the park members do not want. When we attend meetings, we tell them what we think, it’s very simple (Interview 20, Park security officer)

5.3.3 Involvement

Active involvement includes opportunities that create an enabling process by participating in planning, implementation or being responsible for at least part of river basin management (Council, 2005; HarmoniCOP Handbook, 2005). During project implementation, the public was
actively involved in organized river cleanups. River clean-up exercises spearheaded by the Ministry of Environment and NEMA were carried out to remove solid waste materials and other garbage from the river. The resulting effect of this exercise led to a cleaner and less polluted river. This also increased the aesthetic value and beauty of the river. Plates 5.2 and 5.3 show before and after photos of the Ngong river cleanup exercise.

**Plates 5.2 and 5.3: Before and after photos of Ngong River cleanup (Source: WRA official, 2018)**

Many participants however questioned the long-term effectiveness of river clean-up exercises as they proffer only short-term solutions to river basin management. A few participants advised a sustainable approach focusing on learning and increased education (Workshop participants). When
asked about their level of involvement in river cleanup exercises, some individuals said they had participated, others mentioned being aware of such an exercise but that they could not participate, while the rest expressed the outright lack of awareness of such activities. The WRUA was instrumental in mobilizing community members for river cleanup activities.

We motivate people through public participation, for example when we have meetings or river cleanups organized by the county, we tell people to go attend such meetings, sometimes they are given transport, lunch allowance. That’s a way of motivating them. Also, if there is a program organized by UNEP whereby t-shirts are issued through such functions, we tell the community to go there and participate in the cleanup and tree planting, then they have issued t-shirts and refreshment (Interview 32, WRUA member).

Another form of involvement in the NRBP was the Kazi Kwa Vigana (Work for Youth) Scheme, a wide employment scheme implemented in April 2009 by the Ministry of Environment and handled by the NCC. The goal of this project was to involve the youth in labor-intensive projects, such as road construction, water supply, sanitation and waste collections, as a means of generating income for the participating youth and providing labor for such activities. During the NRBP, youth employed through this scheme cleaned and monitored different sections of the river and reported any river polluters and offenders. This was described during interviews with NRBP partners and individuals, as stated below:

We use youth, those between 15 and 35 years, we even use those out of school say between 24-35 years depending if they have formal employment or not, because this project was also about improving the livelihood of the youth as we implement it. We use them because they know those who come from their area. We want the youth to benefit from the locality where the river is. It also gives ownership and this way they can see and accept the value of conserving the environment (Interview 6, Ministry of Environment official).

The youth were gathering the waste and transporting them to appropriate areas. They will also plant trees along the riparian area, it has been clear cut and then they do plant. They also protect because you see if we leave it, people can come and uproot them because these are areas with interest, such as those who want to use the trees for business. So, we have to protect the area, when they see someone tampering with what we have done, they check
and tell us. If someone is dumping illegally, they will call us and tell us (Interview 6, Ministry of Environment official).

There was a time I know the Ministry of Environment employed youths and assigned them to some river sections (Interview 3, NCC official).

When asked how involvement was encouraged in the NRBP, most project partners mentioned the public’s involvement in organized river cleanups and the nationwide employment scheme; some felt involvement was lacking while others noted that involvement complied with regulations and notices. Overall, responses among NRBP partners on this topic were mixed, as many felt involvement was greatly lacking and others felt the few mechanisms of involvement identified could have been improved on, as seen in the quotes below.

Involvement was inadequate because involvement means resources (Interview 8, former project coordinator, UNEP).

As far as I know it’s just mostly government participation, not too much of the public. I have not seen public encouragement to participate (Interview 4, NEMA official).

I think the public is expected to move away from the riparian land and respond to the notices, that is how they are involved (Interview 1, NCC official).

Involvement in the KRP includes regular cleanup exercises, guided river walks, youth training and education. The data indicate that the FOCP organized river cleanups quarterly and guided river walks monthly to encourage the participation of stakeholders in the implementation of the river restoration project. Individual responses on their involvement in the KRP included participating in river cleanups and workshops.

In the past, we had tree planting in June 2014, which I was among. We also did a series of river cleanups where we removed waste materials which had blocked the river (Interview 10, FOCP member).

With FOCP members we go on river walks and encourage people to write articles. We tell those who have seen the river to write and blog about it to create awareness. We have a big
platform, history, resources and information. People can tap into it and make the park known (Interview 18, Individual).

As for FOCP, I think they have tried to upgrade the river and they have raised concerns as to how we can participate as a community. Sometimes we come with a rake, we collect garbage within the river and try to entice the community on how to clean the river (Interview 20, Park security).

The wide stakeholder workshop, which was held by the FOCP in 2016 with about 256 participants, was a consultative planning and decision-making session. Participants ranged from government officials, surrounding park stakeholders such as the IandM Bank, Baps Temple and Premier Academy, park users, FOCP members, private organizations and individuals. Stakeholders in attendance contributed to final KRP master plans. A follow-up workshop with 23 participants, mostly park users, FOCP members, academia, a few government officials and myself, was held during my time in the field, and discussions there centered around choosing a management structure, giving feedback on the 2016 workshop and assigning new deadlines to river projects.

5.3.4 Summary of Levels of Public Participation

Table 5.3 highlights the levels of public participation in both cases, categorized by information communication, consultation and involvement. The table also features the mechanisms used to encourage public participation, as described in the sections above, as well as the participants involved via those mechanisms. As established in the discussion above and seen in the table below, several methods were used to encourage public participation in all three levels at least to an extent in both cases. Information about both cases was disseminated to the public through various mediums. Although many individuals noted the inability of some people catching press releases due to how quickly such messages would effectively disappear. Consultations in both cases were carried out mostly through meetings, and workshops in the case of the KRP. It should be noted that NRBP consultative meetings were not designed to seek input, but rather to convince the public.
to support decisions and plans already made. Similar kinds of consultations, such as public meetings and forums and involvement were seen in many river restorations cases in the literature, including the Ouseburn River Catchment Plans (Council, 2005) and the Rhine River Restoration Project (Lange 2008; Rowe and Frewer, 2000; Nones, 2016).
Table 5.3: Levels of public participation in both cases

<table>
<thead>
<tr>
<th>Cases</th>
<th>Information Communication</th>
<th>Consultation</th>
<th>Involvement</th>
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<tr>
<td></td>
<td>Mechanisms</td>
<td>Participants</td>
<td>Mechanisms</td>
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<td>NRBP</td>
<td>Press releases</td>
<td>General public</td>
<td>Community meetings</td>
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<td>Tv, Radio</td>
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<td></td>
<td>Newspaper</td>
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<td>Brochures</td>
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<td>Flyers</td>
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<td></td>
<td>Reports, Posters</td>
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<td></td>
<td>YouTube</td>
<td></td>
<td></td>
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<tr>
<td>KRP</td>
<td>Newsletter</td>
<td>Park users</td>
<td>Workshops</td>
</tr>
<tr>
<td></td>
<td>Reports</td>
<td>Interested stakeholders</td>
<td>Open forums</td>
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<td>Emails</td>
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<td>Community visits and interactions</td>
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<td>Posters</td>
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For a public participation process to be effective and successful, the overarching principles and indicators of best practice public participation should be followed (see section 2.5). These principles also serve as ideal conditions for learning. The NRBP lacked many of these principles, such as there was no involvement in planning in the project design stages, involvement in project plans was not early enough and participants also noted a lack of adequate information.

5.4 Benefits of Public Participation in Both Cases

The benefits and advantages of having an effective and efficient public participation process in environmental management, including in river restoration projects, cannot be overemphasized. The right form of public participation not only increases trust in the governmental processes, but it improves the quality of decision making, reduces public resistance, creates a better understanding of issues and fosters learning (Smith, 1983; Wouters et al., 2011).

When asked the reasons why the public should be involved in river restoration initiatives, many government officials noted that public participation can increase the chances of a successful project, ease the implementation of plans and reduce public resistance.

Public support and participation are very important and it can give us quick success. The response we are getting from the ground, where people are ready and willing to tell you offenders, tells you the public can be on your side … if the public is on your side, the ground is softer for you to come in. In my daily experience, if am planning to do a project in an area, the first point of vision or information is the community, if they are ready and willing to talk to you, they will give you information, then you can use that to your benefit. (Interview 1, NCC official).

Consultation and collaboration is critical to project success and sustainability. Collaboration is unavoidable (indispensable). Participation is expensive, time-consuming and it's hard to come to a consensus. The issue of cleaning the river requires an integrated approach. It requires a holistic approach. River beneficiaries, polluters, cleaners should be in one table to come up with good ideas. Those who are benefiting from the river, those
who are polluting the river and those who are cleaning the river should work out a solution together (Interview 3, Nairobi City County official).

A few FOCP stakeholders also supported this, saying:

Involving the public has many benefits I must tell you. First the trust and relationship we have with other stakeholders are commendable. I think the way we have tried to involve people is what has kept this project running till date. We know we can’t do it alone so we greatly rely on park users to tell us information, together we can achieve more (Interview 10, FOCP member).

From my experience, I think involving in the public network makes it a lot easier and you have support from the larger public. You see sometimes when you start a project and you don’t involve the stakeholders, you find due to that lack of understanding you meet a lot of resistance, especially from the public because they feel you have a funny motive. Involving all the stakeholders is quite positive because you get support all the way (Interview 14, NMK official).

So, I must confess that if an initiative is to succeed, the participation of the stakeholders themselves, including the people who just live or bathe near the river, is a prerequisite. The management of top to bottom has not worked very well but when you do the bottom-up approach, first people appreciate, and then accept to walk the journey together (Interview 15, NMK official).

Some individuals also mentioned that participating in the river restoration cleanups and FOCP workshops increased learning, and created a sense of ownership and inclusion in project plans (Workshop participants). They especially liked the fact that they were important enough to be called upon or invited to gatherings.

I particularly enjoyed the meetings and workshops I participated in with the FOCP, I learnt a lot about rivers and what we can do about cleaning it up (Interview 26, Park user).

I think it's important for the government to realize that they need to bring us on board and take our opinions seriously, this will make us feel recognized. This river belongs to all of us and we must protect it (Interview 33, Individual).

5.5 **Challenges of Public Participation in Both Cases**

Despite the many noted benefits and the importance of public participation in river restoration, there are many associated challenges. Public participation seems like an easy and straightforward
process; however, when done properly it can be very intensive and time-consuming (Heldt et al., 2016; Nones, 2016). Common challenges of public participation in restoration projects identified in the literature include lack of public awareness, lack of trust in government policies and individuals’ perceptions and values (Alam, 2013; Dienno and Thompson, 2013; Palmer et al., 2005; Tunstall et al., 2000).

Some challenges encountered in both cases, as described by NRBP partners, FOCP officials and the many individuals interviewed, include limited resources, public cynicism and distrust in government policies, and lack of capacity building and awareness. In terms of resources and mobilization, many government officials noted the meager budget allocated to organizing public forums, meetings and consultations with community members. River cleanup activities and education campaigns also require a lot of resources, such as equipment, printing cost and transportation fees, to mention a few that were sometimes lacking. This was noted by stakeholders involved in both cases, as described in the quotes below.

Involvement was inadequate because involvement means resources, so I think the government and other players can say that for you to be involved, they have secured the area for you and you have resources. I think until resources have been assigned to make sure there is constant involvement, we can’t talk about involvement, it’s a heavy investment … there is no proper structure that this is the format for maintenance or this is the structure for the continuance. I think it is lacking, those are some of the gaps that I think, when we put them together, when we fulfil those gaps, the situation will be better (Interview 8, former project coordinator, UNEP).

The entire work needs manpower. Without manpower we can’t clean up the river, so they can come with that solution if they have money. The only thing we need is wheelbarrows and people, but they don’t want to do that. I don’t know what is happening. We here, we wait for them to say this step to follow. We have ideas but we don’t know how to say it (Interview 27, Individual).

In terms of capacity building, many government institutions, despite being aware of the need to encourage public participation, lack the skills, knowledge and zeal to effectively carry out the
process. This was especially noted in the interviews with NRBP partners, as they were very much aware of the benefits and usefulness of a public participation process but could not seem to effectively implement meaningful processes.

Data show that participants of both cases unanimously felt that there was little public awareness and education on the restoration projects. All participants expressed that there was a gap in this area and a need to improve it. Many participants expressed that the lack of awareness of some of the project elements made in difficult to participate, especially in the river cleanup exercises. When asked his view on the level of public awareness in the NRBP, an NCC official responded:

Awareness may not be 100% I must admit, because the medium used needs to have a wider reach. If you go to mass media, if I am not watching the news, radio, I will miss that item because it will only feature for 24 hours, you can miss that visual contact. What is required is that at the local community, within certain confines of some boundary, we need to have local participation in terms of having an awareness meeting so we can also meet the local people. Also, we must choose a convenient time when most of the people are there. We can also use other areas like utilize the churches to disseminate the information, this is some of the areas we intend to reach the people on (Interview 1, NCC official).

Another NRBP official also responded to this question by saying:

A lot still needs to be done; public awareness can never be enough. New dimensions are coming in and we need to keep on reviewing them, especially reviewing public successes and failures and awareness (Interview 3, NCC official).

It is not adequate; this is a cosmopolitan area where the person aware might have moved away and a new person moves in. Awareness should be continuous so incomers are aware. Also, we should plough into the options of print media (newspaper, e media, magazines, radio, tv) (Interview 5, WRA official).

Public awareness is very high even if it’s not adequate, I can’t say it’s adequate because I don’t have any measure, but the level is high. I’m surprised you know about Michuki Park; how did you know? That means the level is high and people are aware (Interview 7, Ministry of Environment official).

Some individuals responded similarly, saying:
I won’t say I’m satisfied with awareness. … One thing they are missing is awareness. We are also missing information. When reports are out the common guy does not have access to it or does not understand as it is written in technical jargon. Awareness creation is a major gap (Interview 21, Individual).

Not enough, I think more needs to be done to create awareness and put the fire in people for them to recognize that this is our environment. You know sometimes people accept bad situations and feel it’s normal. Somebody needs to tell people it’s not ok and ask for their support (Interview 22, Individual).

We have to make everyone who works or lives near the river see the usefulness and benefits of the river. They have to know how to keep the river clean (Interview 26, Park user).

I think there could be more done in terms of educating, if you notice from the subsection of those who came from the workshop, it’s predominantly people who care for the environment, which is great because they put themselves in a place where they can find that information, but what about those who will like to be part of it but don’t readily have access to that kind of information? So, it could be heavily publicized, chances are things will move and even more quickly than it's currently happening. I feel there needs to be more of a push towards communicating these ideas of these initiatives, not just leaving them to the communities that surround the area (Interview 13, IandM bank).

5.6 Factors Influencing Public Participation in Both Cases

Although the underlying principles and processes of public participation remain the same regardless of the location, it is still important to consider the context within which such participation occurs as this greatly influences the level and quality of public participation (European Commission, 2002; Planning, 1987). Within both cases, four main external factors influencing public participation were identified; stakeholder commitment, political change, decision-making governance style and corruption.

The foundation for undertaking a participatory approach in a river restoration project is dependent on the willingness of relevant planning groups (European Commission, 2002). This implies that commitment from relevant authorities to follow through with river restoration plans and public involvement methods is key. Heldt et al. (2016), in their paper on the social pitfalls of river
restoration, noted that in the North Rhine-Westphalia river basin stakeholders’ willingness to participate declined at some point due to their perception of the project or just a lack of interest, and hence it was difficult to maintain involvement by both the organizers and participants.

The NRBP indeed lost traction with the death of the Minister of Environment; the level of commitment from stakeholders declined greatly as the champion and project flagbearer was no longer there. His actions and activities were reflected in the timely implementation of project plans; he coordinated experts and stakeholders at all levels. Project implementation was also influenced by political changes, as plans were swayed depending on the political party in power and interest of the leading group.

Barthélémy and Armani (2015), in their paper on the comparison of social processes at three sites on the French Rhône River undergoing ecological restoration, also reached a similar conclusion; in all three cases an elected local figure who became the spokesperson was a critical influence on project implementation and the level of public involvement. The spokesperson or project champion was able to continuously motivate stakeholders. The level of commitment from NRBP stakeholders varied greatly as the project progressed, affecting all components of the project, including public participation.

The project lost traction due to death of the Minister (Interview 8, former project coordinator, UNEP).

The older project seems dead to me, it died with the late minister. Now the president is trying to revamp it and calling it a regeneration project. But the Michuki area was a big achievement” (Interview 4, NEMA official).

The form and level of public participation can vary from case to case depending on the project and governance style (Luyet et al., 2012). Many participants described the governance style as a bit
authoritative, top-down and commanding; hence, it was difficult indeed to carry out a participatory and inclusive process. This was evident as participants expressed their distrust and disbelief in the government system. In terms of corruption, many participants stated that corruption was evident in how most government agencies were run; lack of transparency affected the successful running of the project in areas such as timely payment of wages, enforcement and stopping of illegal discharges. Below are the views of some participants on the issue of corruption.

Another factor that affected the project is corruption – there is no enforcement of existing legislation and policies. The legislation and the policies are in place, but the enforcement is lacking. This prevents development as the corruption has a negative impact on the business climate and on Nairobi as an attractive place to invest (Interview 16, Individual).

During Kazi Kwa Vigena, we used to wash the river, collect the plastics, collect the garbage in the river and slash along the river. When the Kazi Kwa Vigena went off we stopped because of corruption. They went about with our money for three weeks. … When we went to city hall, they said our manager took the money. The second time again, they went with about three weeks of our money. So, it’s twice the government has gone away with my money around, 7000 ksh that the government owes me (Interview 25, Individual).

5.7 Stakeholder Participation in Both Cases

Having identified the kinds of stakeholders in both restoration cases, as seen in Tables 5.1 and 5.2, my consideration of participation by gender revealed many female volunteers and participants in the KRP case, which supports the notion that women are “water keepers” Alam (2013). Continuous discussions and interviews with stakeholders in the NRBP led to a further understanding of the degree of involvement of stakeholders in both cases. Project partners explained, for example, the institutional government hierarchy as this was considered in strategy delegation. Most of them outlined their organization’s role, contributions and level of participation in the project. This helped me gauge the level of influence in the stakeholder assessment.
Table 5.4 below describes the level of influence and involvement of NRBP stakeholders as interpreted through the data collected. Assigning high and low values was based on the information and descriptions provided to me by stakeholders. In terms of contributions and importance to the project as designed, all NRBP partners had a huge role to play in the successful implementation of the project, as specific tasks were assigned to different agencies. The UNEP was the project initiator. The Ministry of Environment was the primary organizer. The African Development Fund also had a huge role to play as the funds diverted into the project were sourced from them. The technical expertise of the University of Nairobi also provided quality academic research and grounded data that supported policy formulation. The Nairobi City Business City Development Association and WRUA had medium contributions by design, as they were expected to aid community mobilization. The public contribution was not clearly defined, hence the low level of their contributions; the public were mostly expected to fall into place. The level of contributions noted for stakeholders in the project did not translate into the same level of influence or participation in the project.
Table 5.4: Stakeholder structuring in the NRBP

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Importance and Contributions to Project</th>
<th>Influence on Project</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Nations Environmental Program (UNEP)</td>
<td>High Project initiator</td>
<td>High Key decision maker</td>
<td>Engaged at various stages High participation</td>
</tr>
<tr>
<td>Ministry of Environment</td>
<td>High Project initiator, coordinator</td>
<td>High Key decision maker</td>
<td>Engaged at various stages High participation</td>
</tr>
<tr>
<td>Athi Water Services Board (AWSB)</td>
<td>High Required to ensure sewer infrastructure improvement</td>
<td>Medium Contributed ideas to decision making</td>
<td>Engaged at various stages High participation</td>
</tr>
<tr>
<td>National Environmental Management Authority (NEMA)</td>
<td>High Coordinating agency and public awareness</td>
<td>Medium Contributed ideas to decision making</td>
<td>Engaged at various stages High participation</td>
</tr>
<tr>
<td>Water Resource Authority (WRA)</td>
<td>High</td>
<td>Medium Contributed ideas to decision making</td>
<td>Engaged at various stages High participation</td>
</tr>
<tr>
<td>Nairobi City Water and Sewerage Company (NCWSC)</td>
<td>High</td>
<td>Medium Contributed ideas to decision making</td>
<td>Engaged at various stages Medium participation</td>
</tr>
<tr>
<td>Nairobi City County (NCC)</td>
<td>High</td>
<td>Medium Contributed ideas to decision making</td>
<td>Engaged at various stages Medium participation</td>
</tr>
<tr>
<td>African Development Bank</td>
<td>High Project sponsor</td>
<td>Medium Project sponsor</td>
<td>Engaged at various stages Medium participation</td>
</tr>
<tr>
<td>University of Nairobi</td>
<td>High Technical expertise</td>
<td>Low Contributed ideas to decision making</td>
<td>Engaged at various stages Medium participation</td>
</tr>
<tr>
<td>Stakeholders</td>
<td>Importance and Contributions to Project</td>
<td>Influence on Project</td>
<td>Participation</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-----------------------------------------</td>
<td>----------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Nairobi Central Business Association</td>
<td>Medium</td>
<td>Low</td>
<td>Engaged at various stages Low participation</td>
</tr>
<tr>
<td>Water Resources Users Association (WRUA)</td>
<td>Medium</td>
<td>Low</td>
<td>Engaged at various stages Low participation</td>
</tr>
<tr>
<td>General public Other CBO’s Civil Society</td>
<td>Low</td>
<td>Low</td>
<td>Engaged at various stages Low participation</td>
</tr>
</tbody>
</table>

The UNEP and Ministry of Environment both have the highest influence and participation in the project, their contributions were strongly felt. The level of influence and participation varied per stakeholder due to the power distribution among agencies. Agencies such as NEMA, AWSB and the WRA have medium influence and high participation as compared to other agencies like the NCC and NCWSC, mostly because they are at the national government level and are in charge of policy formulation and regulation. The NCC and NCWSC are categorized as local-level authorities. This also explains the success rate and speed of implementation; strategies handled by stakeholders with higher power had more visibility, funding and accomplishments.

Similar conclusions were also reached by Barthélémy and Armani (2015) in their analysis of the interactions amongst local and national level stakeholders in three river restoration projects on the Rhône River in France. As described during interviews, the general public, CBO’s and other NGO’s, although having a high interest in the project, had low power, influence and participation. As a stakeholder, aside motivating the project, the public could not have much influence on
decision making or implementation plans, and as the literature suggests, this is flawed because active public participation and inclusion is vital to the success and long-term sustainability of restoration projects (Woolsey et al., 2007).

Focusing on the stakeholders’ willingness to participate in the project, the current river regeneration project or future river restoration initiatives, participants expressed mixed views; most of them expressed their sincere desire to participate in future plans strictly based on their environmental motivations, but felt discouraged with the current NRBP outcomes.

I will be willing to collaborate, by profession you know am an environmentalist. It’s also my passion; I like a clean and serene environment. I enjoy seeing you can change something within the environment (Interview 7, Ministry of Environment official).

If it’s better organized then yes; you want to participate in something you are sure is sustainable (Interview 4, NEMA official).

The degree of involvement in the KRP varied from the NRBP. As seen below in Table 5.5, the FOCP and Nature Kenya, as the primary organizers, had the highest level of participation, influence and importance amongst volunteer groups, but keep in mind a small group such as this needs the authorization and support of government to successfully implement this project. They do not have the capacity or funds to improve infrastructure, and hence they are very much dependent on the NCC and NCWSC who have high means and influence. Private organizations in this case had low to medium influence on the project as they mostly contributed through technical expertise, funds and group support. Individuals, such as park users and sellers, are also very important to the project and are included in the decision-making process. All stakeholders are engaged at various stages through emails, workshops, invitations to meetings, training and guided walks. Monthly reports are also sent out to stakeholders who could not make meetings or workshops (FOCP member, Interview 10).
### Table 5.5 Stakeholder structuring in the KRP

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Importance and Contributions to Project</th>
<th>Influence on Project</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volunteer groups</strong></td>
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<td></td>
</tr>
<tr>
<td>Friends of City Park (FOCP)</td>
<td>High</td>
<td>High</td>
<td>Engaged at various stages</td>
</tr>
<tr>
<td></td>
<td>Primary organizer</td>
<td>Key decision maker</td>
<td>High participation</td>
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<td></td>
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</tr>
<tr>
<td>Friends of Arboretum</td>
<td>Low</td>
<td>Medium</td>
<td>Engaged at various stages</td>
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<tr>
<td></td>
<td></td>
<td>Contributed ideas to</td>
<td>Medium participation</td>
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<tr>
<td></td>
<td></td>
<td>decision making</td>
<td></td>
</tr>
<tr>
<td>Nature Kenya</td>
<td>High</td>
<td>High</td>
<td>Engaged at various stages</td>
</tr>
<tr>
<td></td>
<td>Primary organizer</td>
<td>Contributed ideas to</td>
<td>High participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>decision making</td>
<td></td>
</tr>
<tr>
<td><strong>Government agencies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Museums of Kenya (NMK)</td>
<td>Medium</td>
<td>Medium</td>
<td>Engaged at various stages</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Medium participation</td>
</tr>
<tr>
<td>Nairobi City County (NCC)</td>
<td>High</td>
<td>High</td>
<td>Engaged at various stages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Required to</td>
<td>Medium participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>implement ideas</td>
<td></td>
</tr>
<tr>
<td>Nairobi City Water and Sewerage Company (NCWSC)</td>
<td>High</td>
<td>High</td>
<td>Engaged at various stages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Required to</td>
<td>Medium participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>implement ideas</td>
<td></td>
</tr>
<tr>
<td><strong>Private organizations</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Revive Consulting Group</td>
<td>High</td>
<td>High</td>
<td>Engaged at various stages</td>
</tr>
<tr>
<td></td>
<td>Technical expertise</td>
<td>Contributed ideas to</td>
<td>High participation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>decision making</td>
<td></td>
</tr>
<tr>
<td>Planning System Services</td>
<td>Low</td>
<td>Medium</td>
<td>Engaged at various stages</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Low participation</td>
</tr>
<tr>
<td>IandM bank</td>
<td>High</td>
<td>Medium</td>
<td>Engaged at various stages</td>
</tr>
</tbody>
</table>
### 5.7.1 Stakeholder Interactions in Both Cases

Focusing on the interactions and communications among stakeholders, this section highlights information gathered from NRBP partners and KRP stakeholders. Concerning the kinds of interactions and communications among stakeholders, most government agencies reported peaceful and easy communication and interactions. This was mostly because each agency worked in isolation on its delegated task, only communicating results when necessary. The quotes below illustrate NRBP stakeholders’ feelings about interactions amongst them.

I have not heard of any disagreement because the roles of every agency is clear, the only thing I might say is the response from one agency to another may not be as timely as expected. The strength of a team is as good as its weakest link. If there is dealing somewhere and an agency is not able to execute its bit then it becomes a weak link and that is what we are experiencing now (Interview 1, NCC official).

Communication was very good, it more or less became a talk shop (Interview 8, former project coordinator, UNEP).

The way the project is organized, it’s in such a way that it recognizes the expertise and profession in implementation. For example, planting trees has been designated. … In terms of decisions I have not heard any disagreement. It’s not like we want to put a sewer in a

<table>
<thead>
<tr>
<th></th>
<th>Contributes funds to project</th>
<th>Medium participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baps Temple</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Premier Academy</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Individuals</td>
<td>High</td>
<td>Medium</td>
</tr>
</tbody>
</table>
place and someone says don’t put it here, that how conflict comes, but you see this one, we are just leaving that to that institution to do it. So that is the approach, so we believe it’s the institution’s expertise to do the job so we don’t give too much suggestion (Interview 7, Ministry of Environment official).

I think we have tended to do what I will call piecemeal or isolated cases. You will find institutions with a particular mandate, like WRA, instead of them having an extension arm so they can probably liaise with other agencies they don’t do that, it is just left to the sectoral stage the way it is currently (Interview 15, NMK official).

I think everyone gets along fine, we focus on our jobs (Interview 3, NCC official).

Kibagare river stakeholders also expressed similar views on easy communications amongst them. Stakeholders were kept abreast of all necessary information. However, they noted difficulty in reaching government officials and getting their support on the river restoration initiatives. This was especially challenging as government support is central to many key components of the project, such as the reconstruction of sewers. If the main source of river pollution, in this case sewerage facilities, are not fixed, the rest of the project plans will remain futile. Hence, it was really important for FOCP officials to continuously lobby the government institutions responsible for such works.

Our advocacy journey has been challenging. It's been harder than expected. The government is purposefully unorganized. The government should work as it should. It has been very difficult, there is no effective government organization (Interview 9, FOCP member).

5.8 Chapter Summary

This chapter detailed the processes, methods, benefits, challenges and indicators of public participation in both cases, as gathered through document review, interviews and a workshop. In terms of project planning, data revealed that public participation was not carried out during in the NRBP, but was however evident in the KRP.
A consideration of both cases and the literature (e.g., Carr, 2015; Arntsein, 1969; Wouters et al., 2011; Luyet et al., 2012; Smith, 1986; Nones, 2016; Heldt et al., 2016; Hansen and Mäenpää, 2008; Council, 2005; European Commission, 2002; Planning, 1987) reveals a variety of methods and descriptions of the levels of public participation, ranging from those that provide information (e.g., media releases and reports) and elicit input in the form of opinions (e.g., public opinion surveys, workshops and meetings), to those that help inform policies and project implementation (e.g., river walks, education and sensitization). Both cases showed similar methods used for public information, collaboration and involvement.

Noted benefits of public participation in both cases include an increased sense of ownership and learning. Many NRBP partners also mentioned that public participation can increase the chances of a successful project, ease the implementation of plans and reduce resistance, as also observed in the literature. It should be noted as well that many stakeholders and even the NRBP partners do recognize the benefits of public participation processes, but cannot seem to overcome the challenges they are faced with. Common challenges to public participation in both cases include lack of awareness, lack of trust in government policies and limited resources. It was especially difficult to include river restoration plans in government budgetary allocations and provide necessary resources for activities such as river cleanups, river walks and education campaigns. This was a common challenge in much of the literature considered, as funding is often a major barrier to river restoration plans (Alam, 2013; Dienno and Thompson, 2013; Palmer et al., 2005; Tunstall et al., 2000).

As established in the literature (Barthélémy and Armani, 2015; Nones, 2016; Vreugdenhila et al., 2008), public involvement can influence project implementation and success. Data presented in the sections above further illustrate that the combination of public involvement and strengthened
stakeholder participation can greatly affect the implementation and progress of a river restoration project, positively or negatively. A collaborative approach between statutory bodies (e.g., government agencies, the local authority or the NCWSC) and community organizations (e.g., local trusts, volunteers, ‘friends of’ and local residents’ groups) should be encouraged in any river restoration project (Council, 2005). In terms of stakeholder interactions, it was observed that project partners in both cases felt they had peaceful and easy communication. Although it was sometimes difficult to get everyone on board, the groups remained focused on project objectives.

In addition, one of the main factors influencing public participation is governance style and political change. The NRBP maintained a top-down approach to public participation, especially in terms of consultations, while the FOCP promoted an all-inclusive participatory approach. This was reiterated by many individuals and the community groups involved. Using the operational indicators of public participation, it can be inferred that the NRBP did not display meaningful public participation, especially in ensuring early involvement and effective forums and dialogue. Participants in the KRP, however, noted several opportunities for dialogue that they found effective, especially because they served as opportunities for learning.
CHAPTER SIX – PARTICIPANT LEARNING OUTCOMES

6.1 Introduction

Effective public participation in river restoration projects creates ideal conditions for learning (Webler et al., 1995). The literature outlines attempts to provide a comprehensive model of adult learning that accounts for learning that occurs in real-world resource management situations, often called social learning as described in chapter two (e.g., Bandura, 1969; Bull et al., 2008; Maarleveld and Dabgbégnon, 1999; Schusler et al., 2003; Webler et al., 1995). In my analysis I used the definition of social learning provided by Schusler et al. (2003, p. 311): “learning that occurs when people engage one another, sharing diverse perspectives and experiences to develop a common framework of understanding and basis for joint action”.

As a reminder of the literature reviewed in chapter two, Tippet et al (2005), in their paper on social learning in public participation in river basin management, provide early findings from HarmoniCOP European case studies and suggest that social learning is an outcome of an inclusive participatory process (HarmoniCOP, 2005; Tippet et al, 2005; Water Framework Directive, 2002). Public participation and active stakeholder involvement can result in social learning through collective discussions and actions related to river management (Tippet et al., 2005; Bull et al., 2008; Webler et al., 1995).

In this chapter, I focus on participants’ individual and social learning outcomes as revealed in both cases. I also highlight how such learning occurred and what made learning easier for participants. The literature suggests that when learning occurs as a result of social processes that guide the thoughts of participants, various types of learning outcomes are seen (see Table 2.3). Guided by the literature, the main themes that were identified in the data included: acquisition of knowledge
and skills, increased understanding, shared learning, social action and trust building. The sub-themes that relate to each are outlined in Table 6.1.

Table 6.1: Summary of learning outcomes evident in both cases

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Sub-themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition of knowledge and skills</td>
<td>Learning the importance of river restoration</td>
</tr>
<tr>
<td></td>
<td>Acquiring technical skills</td>
</tr>
<tr>
<td></td>
<td>Acquiring social skills</td>
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<tr>
<td></td>
<td>Learning recycling methods</td>
</tr>
<tr>
<td></td>
<td>Knowing importance of tree planting and clean rivers</td>
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<td></td>
<td>Increasing understanding of river biodiversity</td>
</tr>
<tr>
<td>Increased understanding of issues and common understanding</td>
<td>Learning about the problems, challenges and possible solutions associated with river restoration</td>
</tr>
<tr>
<td></td>
<td>Increasing understanding of informal settlements’ needs</td>
</tr>
<tr>
<td></td>
<td>Realization of stakeholder and public needs</td>
</tr>
<tr>
<td></td>
<td>Identifying challenges and benefits of public participation</td>
</tr>
<tr>
<td></td>
<td>Increasing understanding of river restoration benefits and general processes</td>
</tr>
<tr>
<td></td>
<td>Understanding the different interests of stakeholders</td>
</tr>
<tr>
<td>Shared learning</td>
<td>Sharing ideas with other community members</td>
</tr>
<tr>
<td></td>
<td>Sharing knowledge learnt with colleagues</td>
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<tr>
<td></td>
<td>Gaining better sense of responsibility</td>
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<tr>
<td>Trust and relationship building</td>
<td>Increasing trust among NRBP partners</td>
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<td>Increasing trust among KBP stakeholders</td>
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<td>Improving working relationships amongst partners</td>
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### Learning Outcomes

<table>
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<tr>
<th>Social action</th>
<th>Sub-themes</th>
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<tr>
<td></td>
<td>Practicing recycling</td>
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<td></td>
<td>Reducing use of plastic materials and dumping</td>
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<td>waste into the river</td>
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<td>Reporting river polluters to relevant authorities</td>
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### 6.2 Participant Learning Outcomes

Participants expressed they had learned quite a number of things through their involvement in the restoration projects, especially about river restoration processes, river sustainability, the importance of cleaner rivers, recycling methods and public participation. Five broad themes were identified, as seen in Table 6.1.

#### 6.2.1 Acquisition of Knowledge and Skills

Knowledge acquisition was a major participant learning outcome revealed by data gathered through interviews and workshops in both cases. Many individual participants expressed increased knowledge related to river basin management and the importance of river restoration. Some noted that the NRBP was a good initiative and identified the demonstration stretch as an especially important learning tool that revealed the real-life benefits and importance of river restoration and continuous river basin management. Participants in the KRP also noted that their involvement in developing project plans as an avenue to learn about the importance of cleaner rivers and ensuring restoration.

Another learning outcome in both cases was the acquisition of technical and social skills. This was especially noted in the responses of NRBP partners and FOCP organizing stakeholders, as many of them expressed that acquiring technical skills, such as current river restoration techniques, catchment management methods, water chemistry and possible remediation techniques for river
cleanups, was essential to their work. In addition to technical skills, interpersonal social skills were also acquired due to the socialization and interaction among participants.

I will say there is a better understanding in terms of technical skills and knowledge, there are better approaches and other things people are thinking about (Interview 8, former project coordinator, UNEP).

I have learnt more on the technical side. On the community side, I have learnt to have a thick skin. City Park is a clear example of how government is failing to manage public assets for the betterment of the wider public (Interview 9, FOCP member).

Sincerely, working together with different people is difficult, with NEMA we are the coordinating agency, so I especially learnt how to deal with people on this project, those interactions were needed to allow good meetings (Interview 4, NEMA official).

Many individuals also expressed the kinds of knowledge acquired in terms of learning about river biodiversity, river restoration activities and even general knowledge on waste recycling.

The new idea I got from the FOCP is that you can take the plastic bottles and resell them, that is what they told us (Interview 25, Individual).

I learnt about the river biodiversity and what we can do to bring it back. From my understanding from the workshop, much river biodiversity is gone due to the pollution (Interview 18, Individual).

I have learnt the importance of tree planting and a clean environment and clean river. I have also learnt the importance of working together; you can work with those in your neighborhood and do something constructive” (Interview 28, Individual).

6.2.2 Increased Understanding and Common Understanding of Issues

Increased understanding of river restoration and issues arising in it were participant learning outcomes noted during interviews with participants in both cases. This included learning about things such as: the impact of the location of informal settlements, public participation challenges, stakeholder participation needs, the different interests of various stakeholders, the problems degrading the river and challenges and possible solutions associated with river restoration.
Many participants described a deep sense of reflection on issues and an increased understanding of the problems related to informal settlements and how their own perceptions and lifestyles have affected the river and restoration efforts at large.

This experience covers working in informal settlements and what struck me most is that the provision of sewerage and sanitation facilities is very important for health and human dignity. Having been in informal settlements where they have never had a toilet before, where we were able to construct toilets you could see the joy and happiness on people’s faces by improving these services. That touched me; it’s like making a big difference in someone’s life. Having proper sanitation is very important, seeing a clean environment is very gratifying for a human being (Interview 7, AWSB official).

In addition, when asked about what they learned from their experiences working with other partners, many respondents revealed the intrinsic value they now place on the rivers, as well as a deeper understanding of public participation challenges and benefits. Interviews with most NRBP partners and FOCP members included expressions of their sincere realization that ensuring public participation in project plans is key. Participants also noted the further understanding of stakeholder needs and how the collaboration of stakeholders can improve project success. This increased level of understanding was a result of their participation.

I have learnt many things which I can make inferences and things I think appear to control the participation of people. In specific, I now understand that people appreciate the thing they benefit from, that’s one thing I have observed. So we need to continue to educate them on the benefits of our project so they can participate better (Interview 6, Ministry of Environment official).

I have come to appreciate the power of stakeholder participation – people who are experts in their field can bring a lot into the conservation (Interview 18, Individual).

One of the things I have learnt, or let me say a couple things: 1) there are a couple of private sectors who are very passionate about the project, which is wonderful, they will put their money where their mouth is which is good; 2) it takes so long to mobilize the government to do what they are supposed to do (Interview 19, Individual).

My ideas have changed. When you are working with stakeholders you gain a lot of ideas you didn’t have personally. You get new ideas by involving many stakeholders, things that
never crossed your mind come up and you learn them by interacting with them (Interview 14, NMK official).

Some other participants also expressed the surprising revelation of how complex river restoration is, as restoration was not known to many of them prior to their participation. Participating in these projects has led to a deeper understanding of the broad concept of river restoration.

The main thing I will say is when river restoration came in, I thought it was a science, I thought it was a scientific thing where maybe you know the tree species, you know how to grow them, but when I started working, I learnt there is a lot of social aspects in river restoration than there are scientific aspects. There are a lot of social issues I didn’t imagine before (Interview 6, Ministry of Environment official).

### 6.2.3 Shared Learning

While many participants expressed their individual learning outcomes, a few noted the need to share their knowledge and skills with others. Especially in the KBP, participants expressed individual ways they have tried to share their knowledge with others to further motivate participation and learning. Participants were motivated to share their experiences due to their new realization and change in perception of river cleaning.

I have tried to bring this back with me where in live in Thika, I am the chair of the neighborhood group, where we have also tried to do cleanups and plant trees. I am not only seen to do what I do with the government during working hours, but I try to take it beyond that to my personal life (Interview 14, NMK official).

Sometimes I share some of this information with my friends and it sort of makes me look cool. There are tid bits I learn (Interview 22, Individual).

I always talk about river restoration with my business group who meets every Tuesday. It’s just creating that awareness. And then you learn of individuals, I learnt of an individual who has footage of the river because they are so concerned about the state of the river, so you find with those individual composition you find those who are interested as well (Interview 19, Individual).
6.2.4 Trust and Relationship Building

Increased trust was revealed through interview comments from NRBP partners and FOCP stakeholders. Many NRBP partners noted that government agencies had to work on trust and build good relationship amongst each other. This was facilitated as a result of constant involvement and communication with each other.

Well to answer this question, in terms of trust, mentioned before, working together with all partners, attending meetings made all of us trust each other. You know when you are on a committee with people, the working relationship improves through constant communication and meetings (Interview 4, NEMA official).

The KRP participants expressed the immense trust they have in the advocacy group FOCP, this trust was not earned in a day, but was as a result of recurring engagement and listening to the needs of the community. Trust is a common social learning outcome noted by many authors in the literature (e.g., Petts, 2006; Muro and Jeffery, 2008; Schusler et al., 2003; Mostert et al., 2007)

6.2.5 Social Action

In terms of social action, a few participants expressed that their individual learning prompted a sense of a need for action, which motivated them to continuously participate in meetings, invest their time in river cleanups and other related actions. Participants noted in particular that they had engaged in actions like increased recycling efforts and making conscious efforts to reduce the use of plastic materials and other waste that eventually ends up getting dumped into the river.

Personally, I try to practice recycling in my home, I believe by playing my part in this small way, I am also reducing the waste in river. This became very striking to me after participating in a few river cleanups and seeing the number of wastes that could have been bypassed to other places instead of the river (Interview 7, AWSB official).

Another example of social action highlighted in interviews was the act of reporting river polluters to relevant authorities. One participant mentioned he strongly believes that reporting river polluters
to the authorities is a sustainable action that can further aid river restoration activities (Interview 22, Individual). He began reporting river polluters in his neighborhood after being advised by an NCC official that this was possible. A number of WRUA members also mentioned this.

Social action outcomes were also revealed in the KRBP case as deliberations amongst participants resulted in collective and joint efforts, especially in setting up river cleanup activities, gathering to plant trees and taking collective decisions regarding restoration plans. The FOCP has been able to voluntarily mobilize park users and other interested members to take on actions such as tree planting and river cleanups. Members of FOCP also noted that continuous engagement in activism and volunteer work was itself a social action resulting from a deep understanding of the importance and benefits of river restoration.

6.3 Opportunities and Platforms for Learning

Social learning process elements include opportunities for discussion and deliberation. These processes and venues create conditions for learning to occur (Schusler et al., 2003; see Table 2.3 and Figure 6.1). These are similar to the public participation mechanisms discussed in chapter five. Social learning process elements revealed in the data included: open communication, active and diverse participation, repeated meetings and skilled facilitation. The data reveal that these elements provided opportunities for learning to occur through formal and informal means during restoration activities. Formal avenues are those pre-planned and structured platforms with specific agendas. Informal avenues are more casual and easy-going platforms where learning occurs (Marsick and Watkins, 2001). Formal and informal opportunities and platforms for learning identified for both cases are outlined in Table 6.2, while Figure 6.1 represents an informal learning opportunity provided by the FOCP.
Table 6.2: Opportunities for learning in both cases

<table>
<thead>
<tr>
<th>Formal opportunities/platforms</th>
<th>Informal opportunities/platforms</th>
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<tbody>
<tr>
<td>Websites (NEMA, FOCP, AWSB)</td>
<td>FOCP yoga day</td>
</tr>
<tr>
<td>Media releases (tv, newspaper, radio)</td>
<td>Personal meetings</td>
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<tr>
<td>Posters and flyers</td>
<td>Informal conversations</td>
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<tr>
<td>River cleanup activities, tree planting day</td>
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<tr>
<td>NRBP partners steering community meetings</td>
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<tr>
<td>School teachings</td>
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<tr>
<td>FOCP workshops</td>
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<tr>
<td>Guided river walks, 2.5 km demo stretch</td>
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6.3.1 Formal Avenues

The few participants who were aware of the websites noted in Table 6.2 indicated that they had learned from these sources. Only one individual among my interviewees expressed being aware of the NEMA website and stated he had even visited the website. Most NRBP partners, however,
were very much aware of the website and noted this was a learning ground for them. It provided access to inter-ministerial reports and other important information. The FOCP website and blog also provided valuable information, such as progress reports, upcoming events and academic writings on river restoration works, which some interviewees noted was important to be able to access.

Media releases such as television, newspapers and radio were also avenues through which participants indicated that learning occurred. Despite the many problems associated with this medium in terms of timing, it was interesting to see that a few participants still found this to be an opportunity for learning. Many pointed out that this medium made learning easier simply because of the information they were able to hear and harness.

What made me learn I think was reading a newspaper one time, I read about the project and that made me know about it (Interview 27, Individual).

A large number of participants noted that participating in river cleanup exercises and tree planting activities were the most memorable and important learning experiences for them. This was because they were able to see the transformation from a dirty, filthy-smelling river to a cleaner and better-looking one and thereby learn about the river and techniques for cleanup. The culmination of this work reminded them of what the river once looked like and how it can be made clean again. For those who did not participate, they pointed out that the visible result of the 2.5 km demonstration stretch was an amazing learning opportunity. This especially kept them interested in the project and made them more conscious about dumping waste. One participant mentioned during the workshop how he has become conscious about dumping garbage into the river when he walks past the Nairobi river flowing through the CBD, which part of the demonstration area. Individuals in the KRP also noted such learning grounds, for example, an individual who participated in river
cleanup exercises was able to see and appreciate a cleaner river, and more importantly, because they participated in the cleanup process they gained a sense of appreciation for the river and better judgment on littering and waste disposal in the river. This will make them more conscious about dumping waste in the future.

As noted earlier, the inter-ministerial meetings organized quarterly by NRBP partners were venues where deliberations were had and progress was discussed, and these also served as a learning platform for many NRBP partners, particularly in regard to acquiring improved inter-personal skills. These opportunities for deliberations also fostered trust among partners. The FOCP also held meetings monthly.

Participants also noted workshops and group meetings as providing good learning opportunities in both cases. Many participants, especially in the KRP, described that through such gatherings they were able to pick up on many issues and various kinds of information from the diverse group of participants. During workshops, for example, participants were able to enhance their understanding of river biodiversity, interact with other stakeholders and finalize decisions and plans.

I think there are many ways; there is the formal way by having a forum which is well advertised. The 2016 forum was excellent, I thought it was amazing, I mean a couple of volunteers pulling that off was amazing and well done. At an individual level, we can always continue to promote the work (Individual, Interview 19).

I particularly learnt a lot from the workshops I attended, I learnt the many ways we can treat the river and history about the park I never knew about (Interview 18, Individual).

What made learning easy for me is that there was a time we talked about restoring the river and building the bridges in the workshop I attended. What I have learnt about tree planting is that it has given everywhere a good picture and beauty (Interview 20, Park security officer).
You see those FOCP workshops were well organized; we were able to talk and discuss many things about the river and what we can do to help. The coming together of all of us is very good. We achieved a lot (Interview 25, Individual).

The monthly guided river walks organized by the FOCP for park members, users and any interested party were also mentioned by participants as an important learning platform. The walks, which usually lasted about two hours, were to showcase the park, create opportunities for discussion and generating input to restoration activities, and to facilitate learning. I was able to attend three guided river walks during my time in the field.

One participant also noted that it was through his high school education that he learned about rivers and the NRBP. He noted that his earliest recollection of the NRBP was when some government officials visited his high school to explain the project, they even asked them to make river sketches and descriptions of how they envision the Nairobi River Basin. One park user also mentioned participating in the youth training program organized by FOCP’s Nature Kenya in 2016, she noted learning about the ways a river can be made clean from this program:

As I mentioned before, my first learning experience was at my high school when they asked to us describe our plans for the river (Interview 22, Individual).

6.3.2 Informal avenues

Other informal avenues and platforms for learning included personal conversations with neighbors, community leaders and work colleagues. Participant 32 mentioned that he had never seen the NRBP on the news, but his neighbor once informed him about the plans and the importance of supporting the initiative. During my time in the field, the FOCP introduced a free yoga program as a means to gradually attract and bring people together to discuss issues in a relaxed environment (see Figure 6.1). The group then brings up discussions about the park and ideas on cleaning the river. Participants were able to freely contribute, have fun and learn.
6.4 Chapter Summary

This chapter presented the findings regarding participant learning outcomes and process elements that facilitated that learning. Learning outcomes included the acquisition of knowledge and skills, increased understanding of rivers and restoration issues, social action, trust and shared learning. Many participants expressed greatly increased understanding about the importance of river restoration, stakeholder needs, recycling methods, the technical and social skills needed to undertake restoration and increased understanding of river biodiversity, just to mention a few examples of learning outcomes.

These learning outcomes are similar to other findings in the literature (e.g., HarmoniCOP, 2005; Tippet et al, 2005; Water Framework Directive, 2002; Reed et al., 2010). In reality, when we learn something new, our mind is awakened and we become aware of things we never knew about. We are even eager to apply and share our new-found knowledge. Public participation and active stakeholder involvement can result in social learning through facilitating collective discussions and actions (Tippett et al., 2005; Bull et al., 2008; Webler et al., 1995).

Working with different stakeholders also increased learning and helped many NRBP partners and FOCP members learn to deal with people, lessen conflicts, build trust and develop social skills. The literature also establishes collective action as a potential outcome of learning (Maarleveld and Dangbégnon, 1999; Rodela, 2012). This is supported in the data by, for example, the several attempts made by park members to clean rivers, collect garbage and mobilize other members. In addition, the entire process of forming the KRP was a collective action by an advocacy group.

Drawing on the components of social learning as described by the literature (Webler et al., 1995), I can say both cases showed good evidence of cognitive enhancement. Many participants
expressed acquiring knowledge, especially learning about the problems, benefits and possible solutions associated with river restoration, as identified in the discussion above. Many participants noted an increased understanding of issues and rive restoration challenges. Also, they learned about the different interests held by many individuals involved in such a project. For example, diverse groups had varying interest in the Kibaagre river: the NCC Nairobi Metropolitan Services Improvement Project was to build a storm water drainage for irrigation using the Kibagare river, not taking into consideration that the river was highly polluted, so while the FOCP focused on having cleaner rivers, the government wanted to focus on using the rivers for irrigation, not minding the quality, and it took a great deal of communication to convince the government to divert the project and instead support the river rehabilitation.

My data also revealed evidence of individuals learning to better judge situations, problem solve, and gain a sense of responsibility resulting in acting accordingly (Webler et al., 1995). These outcomes can occur as a result of a change in understanding, by developing a new sense of responsibility or solidarity or having a value shift (Bull et al., 2008). While I did find some evidence of this as a few participants mentioned their personal motivations for participating and that they developed an increased sense of responsibility to ensure cleaner rivers, I feel that on a wider scale there could have been a stronger show of this type of learning. This could be as a result of the limited opportunities that encouraged a value shift or that created avenues to question one’s beliefs, aside from river cleanups. Perhaps having multiple demonstration stretches would have served as a better trigger to enhance moral development among NRBP participants. Another consideration is time, as it takes a long time for people to learn, change and experience a value shift (Bull et al., 2008).
Reed et al., 2010 suggest social learning can occur either through “direct interactions”, such as mass media, personal conversations, workshops or telephone conversations. Open communication, active participation, repeated meetings and skilled facilitation were elements that made learning easier in both cases. The KRP participants in particular noted that frequent meetings, participating in river cleanup exercises and opportunities for dialogue made learning easier and created good learning conditions. Most participants believed their involvement with the FOCP in attending meetings and workshops helped increased their understanding of issues and enhanced their knowledge of river restoration. Formal avenues, including news, websites, workshops and river walks, and informal avenues, such as yoga day and personal meetings, were major opportunities for learning in both cases. These platforms were similar to learning grounds described in much of the literature on river restoration and social learning (e.g., Petts, 2006; Muro and Jeffery, 2008; Schusler et al., 2003; Mostert et al., 2007).

Participants in the KRP were quicker to identify and acknowledge their learning outcomes in comparison to NRBP participants. Opportunities for positive learning outcomes in the NRBP were more limited, mostly due to the poor quality of consultations, access to information and limited public involvement in planning.
7.1 Introduction

In Kenya, river degradation is serious and magnified due to illegal waste discharges and only modest sewerage availability (Ongwenyi, 1997). River restoration projects aim at improving the quality of river biodiversity while addressing issues arising from river pollution (Woolsey et al., 2007). The NRBP and KRP, just like other river restoration projects worldwide, aim to address these issues within their local context of Nairobi. Public demand for cleaner and ecologically functioning rivers is a prime motivation for river restoration (Smith et al., 2016; Feld et al., 2011), and as such, public input should be considered in restoration planning and should continue all through project implementation (Speed et al., 2016).

The purpose of my research was to examine the public participation and social learning needs and outcomes of river restoration activities. To achieve this I considered two cases, the NRBP and the KRP. The specific objectives of my research included: identifying the stakeholders that are playing or could play a role in the rehabilitation programs; considering the success of the restoration projects from the perspective of the individuals involved; investigating the contributions the public has made to program design and implementation; exploring the mechanisms used for participation and partnering with civil society as part of the rehabilitation programs; and, determining social learning approaches and outcomes essential to the success of the cleanup and how this learning was facilitated.

To gather data in relation to my objectives I used a combination of data collection methods, including document review, participant observation, river walks, semi-structured interviews and workshops, as described in chapter three. Document review and participant observation began early during the research and continued throughout. River walks were undertaken along three
rivers, the Nairobi, Ngong and Kibagare rivers, to observe river conditions. A total of 35 interviews were conducted while I was in the field; eight with NRBP partners, nine with KRP partners and 18 with individuals involved in some way in the restoration projects (see Table 3.2). A workshop, with 10 participants, was also conducted at the end of the research to validate and discuss some key themes identified during the interviews.

7.2 Conclusions

Based on my analysis of the data collected, conclusions associated with specific objectives are provided in the sub-sections below.

7.2.1 The Role of Stakeholders

River restoration projects require the collaborative efforts of various partners and actors to facilitate and guide decision making, planning and implementation – in other words, collaborative governance (Lee and Choi, 2012; Speed et al., 2016). More importantly, involving the public, as a key stakeholder in river restoration, helps to facilitate learning, creates a sense of inclusion and drives project success (Phalen, 2009; Bakker et al., 2014).

I found that three categories of stakeholders were involved in the NRBP, including: government agencies, such as the Ministry of Environment, UNEP, NCC, NCWSC, NEMA and AWSB; community groups, such as the WRUA, African Development Bank and barazas; and the general public (see Table 5.1). The people behind the initial restoration movement recognized that these stakeholders would play a major role in project formation and implementation, which I found they did in the end. The Ministry of Environment and UNEP launched the NRBP, bringing on board other government agencies to support the project strategies. While the AWSB and NCWSC were instrumental in improving sewerage facilities across the county by completing 3.3 km of trunk
sewers and 43 km of reticulation lines, it was NEMA who was charged with stopping illegal discharges. The African Development Bank served as a funding agency and the WRUA and *barazas* were instrumental in mobilizing community members for participation.

Four categories of stakeholders were involved in the KBP, including: volunteer groups, such as the FOCP and Friends of Arboretum; private organizations, such as the IandM bank and Revive Consulting; government agencies, such as NCC, NCWSC; and individuals, such as park users and other interested and involved individuals (see Table 5.2). The FOCP played a huge role in project formation, organization and mobilizing community engagement. The NCC, in collaboration with the NCWSC, served as a governmental representative in group meetings. The IandM bank funded the initial project study.

Data analysis also focused on understanding stakeholder interactions, involvement and willingness to participate. In the NRBP, the project organizational structure led to overlapping mandates amongst partner institutions. Also, in the NRBP, government institutions were quite involved and had a high level of influence compared to other stakeholders, while the public had an especially low level of participation and influence (see Table 5.4). The KRP had some of the same core stakeholders, but overall there was a more diverse range of stakeholders and a more inclusive stakeholder relationship was revealed. I feel this is because the project was run by a community-based advocacy group with a deeper connection with grassroots communities that they were able to draw upon (see Table 5.5).

### 7.2.2 Participants Views of the Success of the Restoration Projects

The success of the restoration projects was considered using the subjective parameters identified in the literature, which relied on perceptions, preferences, a sense of landscape scenery and public
satisfaction (Palmer et al., 2005; Woolsey et al., 2007). Since this research was qualitative, consideration of project success was based on the perceptions of success of the people involved, and is primarily revealed in the data related to stakeholder satisfaction with the projects’ concept, planning, implementation and achievements.

Perception of success varied amongst participants, especially in terms of their contentment with different project elements. The lack of awareness of project goals and status limited some participants’ ability to even express their level of satisfaction. Most participants indicated that they were, by and large, satisfied with the plans and concepts that were developed to guide the projects, such as the completed 2.5 demonstration stretch. The data reveal however, dissatisfaction with the speed and level of progress related to project implementation. In this regard, participants noted, for example, the fact that sewage treatment had not been improved. Although it has been noted in the literature that river restoration projects are known to take a very long time because the process of recovery is time consuming (Palmer et al., 2005), especially if the level of degradation is high, participants nonetheless felt that this does not justify the slow pace of the NRBP, especially the half-way implementation of strategies that were laid out.

7.2.3 Public Contributions to Program Design and Implementation

Data related to both projects showed evidence of strong public support. Many noted this was due to the expected aesthetic and ecological improvements, which is also noted as a reason for support in many papers on the motivations for river restoration (e.g., Wohl et al., 2005; Jahnig et al., 2011; Deffner and Haase, 2018; Smith et al., 2016; Feld et al., 2011; Chittoor and Schirmer, 2015).

In terms of public contributions to the NRBP project design, it was very clear that due to the organizational structure of the project the public did not have the opportunity to make contributions
to program design and planning. As described in chapter four the project was launched by the UNEP in collaboration with the Ministry of Environment, using a top-down approach with little room for public input. The project concepts were designed and then announced to the general public. Contributions to design plans were mostly from partners and designated agencies, not the public.

The KRP, on the other hand, included significant public contributions in program design. This occurred as a result of the inclusive participatory process encouraged by the FOCP during the project conceptualization stage. Public input was sought through workshops and meetings. Through this medium, the public was able to provide input to the project concept plans.

The two cases displayed contrasting mechanisms to drive public input to program design. The NRBP showed stronger government support and buy-in since it was a government-led project. However, significant public contributions to the program design in the KRP further increased public support, trust and belief in the process. This outcome reflects what is indicated in the literature that encouraging public participation early in project planning can build confidence and trust amongst all parties, and especially makes it easier for the public to engage and participate fully in restoration activities because they are well informed and have been involved in the planning for a long time (e.g., Woolsey et al., 2007; Sinclair and Diduck, 2001; Deffner and Haase, 2018; Kondolf and Yang, 2008).

The importance of public inclusion in project planning was also notable, as a few participants expressed this might be the reason it was difficult to get public buy-in as the NRBP progressed. For example, government officials faced numerous challenges and resistance in resettling informal settlements along the river bank, simply because those dwellers did not buy into the idea. It was
also interesting to note in the KBP case that, despite having public buy-in, it was difficult to get government support. This helps to show that working with all stakeholders to understand their needs and thereby encourage buy-in is necessary for the successful implementation of a river restoration project.

Public contributions to actual project implementation was similar in both cases. The public participated in river cleanups, river walks, tree planting exercises and education campaigns. This is also comparable to the sorts of activities documented in the literature (Quinn and Gilliland, 1989; Alam, 2003; Verweji, 2000), especially as noted in river cleanups of the Manawatu River in New Zealand, the Buriganaga River in Bangladesh and the Rhine River in Germany. The literature notes that many community members and local residents participated willingly in river cleanup activities to show their solidarity and support for the river restoration initiatives, and most of my participants felt this way as well.

The main barriers to public participation in both cases included the lack of adequate capacity and training among responsible personnel and stakeholders, limited resources and the lack of public awareness. These are common challenges identified in the literature (e.g., Alam, 2013; Dienno and Thompson, 2013; Palmer et al., 2005; Tunstall et al., 2000). Lack of broader-scale awareness was identified as a barrier to public participation by all participants.

7.2.4 Mechanisms Used for Participation and Partnering with Civil Society

Chapter five detailed the mechanisms and levels of public participation in both cases, framed by the EU Water Framework Directive (European Commission, 2000). The data reveal that a wide variety of methods were used to encourage public participation, including information provision, consultations and active involvement (see Table 5.3). Although these elements were noted in both
cases, inadequate information and level of awareness was still a common issue noted by most participants. Despite the efforts made at communication, participants also felt that there was inadequate communication in both cases.

Participation, when it occurred, was encouraged through consultation and dialogue. Consultation mainly occurred through town hall meetings in coordination with public *barazas* and local leaders. Consultations carried out for the NRBP were not viewed as effective, as meetings focused on informing and convincing the public rather than seeking input or collaboration as suggested by the literature (e.g., Carr, 2015; Luyet et al., 2012; Wouters et al., 2011; Smith, 1986). The KRP, however showed more effective consultations as stakeholders were able to freely communicate their views and contribute to project plans through workshops and frequent meetings.

Another mechanism used for public participation was involvement in actual restoration activities, which was incorporated via employment schemes, river cleanup activities and education campaigns.

### 7.2.5 Social Learning Outcomes and Approaches

Significant participant learning, including individual and social learning outcomes, occurred in the two cases. Learning outcomes revealed in both cases include knowledge and skill acquisition, trust building, increased understanding of issues and shared learning (see Table 6.1). Specifically, learning outcomes ranged from an enhanced understanding of river restoration processes, benefits and challenges, to understanding diverse stakeholder needs and learning about river biodiversity and recycling methods, as established in chapter six. Participation in river restoration activities stimulated learning, both individual and social learning. Participants mostly gained knowledge
about river biodiversity and learnt new technical and social skills, which they were able to apply and indicated they will likely continue to apply into the future.

In addition, understanding the benefits of public participation in river restoration and how this engagement can reduce public resistance and increase success was also a learning outcome for some participants, especially NRBP partners. Recurring and constant engagement also seemed to improve trust among NRBP partners and FOCP stakeholders, according to their responses. Trust is a common outcome of social learning as noted by many authors in the literature (e.g., Petts, 2006; Muro and Jeffery, 2008; Schusler et al., 2003; Mostert et al., 2007). Furthermore, my data aligns with the notion that deliberative public participation opportunities foster learning and build trust (Petts, 2006; Muro and Jeffery, 2008; Mostert et al., 2007).

Most of the learning in both cases occurred as a result of social activities that encouraged deliberation, including formal venues such as workshops, news items, river cleanups and river walks, and informal avenues like personal discussions and the FOCP yoga day. These platforms have also been identified as learning grounds in the river restoration and social learning literature (e.g., Petts, 2006; Muro and Jeffery, 2008; Schusler et al., 2003). It should be noted that participating in river restoration activities provided suitable conditions for learning, as learning can occur through direct experience, observing other people, or by group interactions or discussions, as described by Maarleveld and Dabgbégnon (1999).

Opportunities for positive learning outcomes was restricted amongst the NRBP participants due to the limited opportunities for dialogue and quality of consultations. Although NRBP participants acknowledged learning outcomes, I believe these outcomes could have been magnified if there were improved forms of consultations and public engagement.
7.3 Recommendations

The following recommendations are based on the data gathered through interviews, conclusions from my data analysis and suggestions made by some participants. The recommendations are presented following two themes: public participation and river restoration.

7.3.1 Public Participation

I. Early involvement and effective consultation

Early participation in future project planning should be encouraged as this is key to public involvement, buy-in and acceptance, and to project success, as suggested by my participants and the literature (Woolsey et al., 2007; Sinclair and Diduck, 2001; Deffner and Haase, 2018; Kondolf and Yang, 2008).

Maintaining meaningful consultation processes will also greatly aid public participation. Participants indicated that this can be accomplished at least in part by ensuring adequate notice is provided before meeting dates, meetings are held at suitable locations for all parties and, most importantly, community concerns and issues raised during meetings are discussed and incorporated into decision making as appropriate. Improving the quality of dialogue would also promote a transparent process, increase learning and build trust.

In addition, participants felt that participation would be improved through the stronger inclusion of CBOs or advocacy groups, such as the WRUA, FOCP, Friends of Karura, Friends of Arboretum and Nature Kenya.

II. Improved communication and awareness

Communication, or the lack thereof, was a common theme in the data, and organizers of both projects need to look to ways to improve communication and information sharing to encourage
public participation. Improving communication to the public will increase awareness and education, and foster learning (Luyet et al., 2012; Nones, 2016; Sten Hansen and Mäenpää, 2008). Although several communication strategies were deployed in both cases, many participants still mentioned wanting better communication mediums and frequency.

The organizers in both cases should invest in maintaining and advertising one central website. Investing in one central NRBP website, where all information on the project can be accessed, would help improve project communication. All brochures, videos, government agency reports on the project success and status would be posted on this website. It would serve as a central information hub on project details. Anyone with access to the internet could always find information here. Individuals could also give suggestions and provide comments through the website.

To increase public awareness, organizers of both cases should increase media airplay and running time of advertisements of project plans. Efforts in this regard should be redoubled to increase media reach. Newsletters should also be posted on the centralized website at least weekly. Increasing communication and information availability in turn increases public awareness of the project.

In a bid to increase awareness, education campaigns that target everyone, including schools and ages 6-15, should be implemented. Early forms of teaching targeting younger minds will facilitate participation, enhance behavior change and raise consciousness regarding river restoration projects. Education could be in the form of river restoration campaigns targeting different age groups and demographics.
III. Personnel training and capacity building

Personnel training and capacity building of government officials should be encouraged to achieve meaningful public participation. My data indicates that improved training for government officials, water managers and NRBP partners is needed to equip them with the appropriate skills on how to effectively carry out public participation. As identified in the data, many officials did not truly understand what and how to effectively carry out a public participation process. Many NRBP partners described public participation as merely compliance to notices, required by law, employment schemes and river cleanups. In reality, public participation goes far beyond this, and a clear gap in understanding this was noted.

The literature suggests that the form and effectiveness of a public participation process is dependent on the personnel administering and overseeing the process (Phalen, 2009; Bakker et al., 2014). It is therefore important to equip governmental officials, water managers and environmental practitioners with the appropriate skills on how to engage the public; this will greatly aid the public participation component of river restoration activities (European Commission, 2002).

In addition, limited opportunities to engage in meaningful participation negatively affected opportunities for learning. Learning outcomes are likely to improve if the recommendations above regarding meaningful participation are implemented (e.g., Lee and Choi, 2012; Speed et al., 2016).

7.3.2 River Restoration

To increase the chances of a future successful river restoration project, a holistic, integrated approach should be taken. River restoration needs to be part of the broader river management system and not a one-off project. Discussions with workshop participants noted that intermittent river cleanup activities are not a sustainable approach to ensure the long-term viability of the
Nairobi River Basin. River cleanups are short term solutions that do not necessarily target the pollution sources or result in lasting change. It is therefore imperative to include river beneficiaries, polluters and cleaners in an ongoing and integrated decision-making process.

Planning and zoning regulations also need to be enforced as part of river restoration and broader river management. There is no reason why building permits should be provided for new construction activities along the river in the riparian zone. The Environmental Management Coordination Act regulations should be enforced. This will target the source and provide a lasting solution. The same recommendation was suggested by workshop participants.

To avoid the issues of multi-sectoral fragmentation, overlapping mandates and delegation of responsibilities, one participant also suggested developing a central Nairobi River Basin Authority that would specifically focus on the Nairobi Basin.

7.4 Concluding Reflections

Having carried out this study, I was impressed to find the high level of activity around river restoration initiatives in Kenya and that this is happening through both government and non-government initiatives. Both cases aim at addressing issues arising from river pollution through sewerage improvement, solid waste management, landscaping and beautification of the riparian land. Data reinforced the notion that the motivation for river restoration often stems from public demand for cleaner rivers and ecological improvements. These two projects made some headway through the collaboration of stakeholders, the public and third-party funding. For example, success was recorded in the area of improved sewerage facilities; 3.3 km of trunk sewers and 43 km of reticulation lines were completed (NaRSIP report, 2016; AWSB official, Interview 7). The FOCP,
through constant engagement, were also able to report the broken Kibagare trunk sewers to the government, which led to the inclusion of the sewer rehabilitation in the NaRSIP II projects.

The data also highlighted the effects of political change on environmental projects. A political champion or spokesperson has a great influence on project implementation, just as the Hon. Michuki had a huge influence on the NRBP, so much so that his death resulted in a huge setback in project plans. The same was noted by Barthélémy and Armani (2015), who found that in all three river restoration cases they considered, the elected local figure was a key influence on project implementation and even on the level of involvement of other stakeholders.

Finally, evidence of cognitive enhancement was well established in this research, it was however interesting to note that the KRP participants showed stronger evidence of social learning outcomes as these participants were quick to identify what they learnt and how they learnt it. This reinforces the fact that opportunities that facilitate discussions, interactions and deliberations indeed foster learning (Petts, 2007; Petts, 2006; Bull et al., 2008, Schusler et al., 2003).
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visited 11\textsuperscript{th} November, 2018


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APPENDIX 1: INTERVIEW SCHEDULE FOR NRBP PROJECT PARTNERS

Introduction

(Participants will be asked to sign interview consent form. In cases where I do not have enough information about the organization I will ask these brief introductory questions)

Can you tell me a little bit about your organization?

What is your role in this organization?

NRBP Project background

1. Can you tell me a little bit about the Nairobi river restoration program?

2. What are some of the factors that motivated the implementation of this project – did the public play any role in motivating this project?

3. Can you tell me why your organization chose to partner with other stakeholders to initiate this program?

Planning and Implementation

4. What role did your organization play in initiating and planning this program?

5. The NRBP has ten strategies – why these 10 - what considerations were made when setting up these strategies?

6. What challenges did your organization face during the planning phase and what actions were taken to overcome these?

7. What goals were set during the planning and how is the project meeting those goals?

8. What are the major obstacles and barriers affecting implementation?

Public participation

9. How and when was the public involved in the planning process- what steps were taken?

10. How is the public involved now in the operational phases?

11. How does the public have access to information concerning this project?

12. Do you feel the level of public awareness and involvement in this project is adequate? If so why, if not why not?

13. What mechanisms have been put in place in encouraging public participation?

14. Have there been any forms of public involvement in these activities, if so please share and why do you think they are actively involved?

Learning opportunities and outcomes
15. What types of opportunities are there for discussion, communication, and deliberation among stakeholders?

16. How did the partners work to take collective action towards the restoration initiatives?

17. How did/do the partners inform themselves about best practices for river restoration? (e.g., through discussion – guest speakers…)

18. If there was/is a debate about issues among the partners how were these resolved?

19. Has your thinking about river restoration or working with partners to implement a project changed since you got involved – have you developed new ideas or thinking?

20. What is the most important thing you have taken away from your experience so far?

21. How have you been able to link any of your learning experience with your everyday life?

22. Was there anything that encouraged your thinking or learning and made it easier?

23. Would you participate in another restoration project if you could or would you collaborate in more projects like these?

**Monitoring and evaluation**

24. So far, what has this project been able to achieve – what is the progress status?

25. What mechanisms have been put in place for monitoring and evaluation?

26. Looking into the future, what do you hope this project would achieve?

27. What are the important changes you want to see that would make you consider this project successful?

28. As a key stakeholder are you satisfied with the project design, planning, implementation and result so far and why?

29. What barriers might hinder or foster the successful completion of this project?

30. Do you feel you have the public support in this project, if so in what way? If not why not?

31. Would you like to share any additional thoughts that you might have missed all through this interview?

32. Would you like to participate in a workshop?

*Thank you for your time*
APPENDIX 2: INTERVIEW SCHEDULE FOR KBP STAKEHOLDERS

Can you tell me a little bit about this organization?
What is your role in this organization?
How long has this organization existed in this community?

NRBP Project background

1. Can you tell me what you feel the key elements of the broader Nairobi river restoration program are?
2. What do you think motivated the implementation of this project – did the public played any role in motivating this project?
3. Were you in any way involved in the planning and implementation of NRBP at large?

Participation

4. What are your contributions to the planning and implementation of this part of the restoration? Please share specific contributions.
5. What has motivated you to participate in this project and how do you motivate others?
6. What kinds of mechanisms have been put in place to facilitate participation?
7. How was the public involved in the decision-making and project implementation in your project?

Learning opportunities and outcomes

8. How does your organization engage with other organizations involved in this project?
9. Are there opportunities share and discuss ideas – engage in planning – e.g., public meetings, community talks, river walks?
10. Have you been involved in any form of collective actions towards the restoration initiatives? If so what activities and how have you been involved?
11. Has your thinking about river restoration or working with individuals to implement a project changed since you got involved – have you developed new ideas or thinking?
12. What is the most important thing you have taken away from your experience so far?
13. How have you been able to link any of your learning experience with your everyday life?
14. Was there anything that encouraged your thinking or learning and made it easier?
15. Would you participate in another restoration project if you could or would you collaborate in more projects like these?
Monitoring and evaluation

16. So far, what has this project been able to achieve – what is the progress status?
17. Looking into the future, what do you hope this project would achieve?
18. Are you satisfied with the objectives of the project, planning, implementation, and progress so far?
19. Do you feel the level of public awareness and involvement in this project is adequate? If so why, if not why not?
20. What are the important changes you want to see that would make you consider this project successful?
21. What barriers might hinder or foster the successful completion of this project?
22. Would you like to share any additional thoughts that you might have missed all through this interview?
23. Is there anyone you suggest I interview to learn more about this topic?

Thank you for your time
APPENDIX 3: INTERVIEW SCHEDULE FOR INDIVIDUALS

Can you tell me a bit about yourself? (Number of kids, work, level of education)

How long have you lived in this community?

NRBP Project background

1. Can you tell me what you know about the Nairobi river restoration program?
2. What do you think motivated the implementation of the NRBP – did the public play any role in motivating this project?

Public participation

3. Can you tell me what you know about the restoration activities happening in your area?
4. When did you first hear about restoration initiatives happening in your area? During planning, or implementation?
5. Were you in any way involved in the planning of this project?
6. What motivated you to participate in this project? Have you tried to get others involved?
7. In what ways and areas have you participated in the restoration initiative?
8. What challenges do you encounter during your involvement?

Learning opportunities and outcomes

9. Are there opportunities to share and discuss ideas – engage in planning e.g., public meetings, community talks, river walk?
10. Has your thinking about river restoration or working with partners to implement a project changed since you got involved – have you developed new ideas?
11. What is the most important thing you have taken away from your experience so far?
12. How have you been able to link any of your learning experience with your everyday life?
13. Was there anything that encouraged your thinking or learning and made it easier?
14. Would you participate in another restoration project if you could or would you collaborate in more projects like these?

Monitoring and evaluation

15. So far, what has this project been able to achieve – has noticeable progress been made?
16. Looking into the future, what do you hope this project will achieve?
17. Are you satisfied with the project objectives, planning, implementation, and progress so far? Or do you think the government missed anything?

18. Do you feel the level of public awareness and involvement in this project is enough? If so why, if not why not?

19. What are the important changes you want to see that would make you consider this project successful?

20. Would you like to share any additional thoughts that you might have missed all through this interview?

21. Is there anyone you suggest I interview to learn more about this topic?

Thank you for your time
APPENDIX 4: U of M ETHICS APPROVAL LETTER

PROTOCOL APPROVAL

TO: Omotuyole Regina Sobowale  
Principal Investigator

(Advisor: John Sinclair)

FROM: Kevin Russell, Chair  
Joint-Faculty Research Ethics Board (JFREB)

Re: Protocol J2017:107 (HS21285)  
“The Potential for Learning through Public Engagement in the Nairobi River Rehabilitation and Restoration Project”

Effective: December 1, 2017  
Expiry: December 1, 2018

Joint-Faculty Research Ethics Board (JFREB) has reviewed and approved the above research. JFREB is constituted and operates in accordance with the current Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

This approval is subject to the following conditions:

1. Approval is granted only for the research and purposes described in the application.
2. Any modification to the research must be submitted to JFREB for approval before implementation.
3. Any deviations to the research or adverse events must be submitted to JFREB as soon as possible.
4. This approval is valid for one year only and a Renewal Request must be submitted and approved by the above expiry date.
5. A Study Closure form must be submitted to JFREB when the research is complete or terminated.
6. The University of Manitoba may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba Ethics of Research Involving Humans.

Funded Protocols:
- Please mail/e-mail a copy of this Approval, identifying the related UM Project Number, to the Research Grants Officer in ORS.

Research Ethics and Compliance is a part of the Office of the Vice-President (Research and International)
umanitoba.ca/research
APPENDIX 5: KENYAN RESEARCH PERMIT

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

SET No: NACOSTI/P/18/97017/22238

Date 18th May, 2018

Omotuyole Regina Sobowale
University of Manitoba

CANADA

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “The potential for learning through public engagement in the Nairobi River rehabilitation and restoration project,” I am pleased to inform you that you have been authorized to undertake research in Nairobi County for the period ending 3rd November, 2018.

You are advised to report to the County Commissioner and the County Director of Education, Nairobi County before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a copy of the final research report to the Commission within one year of completion. The soft copy of the same should be submitted through the Online Research Information System.

DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.
APPENDIX 6: WORKSHOP GUIDE

Good morning everyone. Thank you for meeting with me today and mostly for choosing to participate in this workshop. As you will probably recall I am Regina a Master’s student at the Natural Resource Institute, the University of Manitoba, Canada conducting research on the potential for learning through public engagement in NRBP. The purpose of this workshop is to share with you some of the aggregated findings of the interviews I did, to discuss those findings and to any further input you might have on Nairobi river restoration project and river restoration more generally. I am going to be facilitating this workshop. We will be using sticky notes and flip-chart paper to aid your participation, so please feel free to write down or express your comments on these.

Discussions on key findings
1. How will you describe Nairobi River’s state 30 years ago, 10 years ago and now? Write what comes to mind in each scenario on a piece of paper
2. When you hear of a river restoration or rehabilitation project, what comes to mind, what do you think such projects are meant to do? Is it the same as a river cleanup exercise or is there a difference?
3. How successful was the NRBP project implemented by Michuki and do you feel it is still ongoing? What have been the most significant outcomes of the restoration work so far?
4. Do you feel the level of public awareness and involvement in this project is adequate? If so why, if not why not?
5. What sorts of things have you been able to accomplish as a group in Kibagare river restoration that you otherwise feel would not have been possible?
6. What are the challenges and barriers to implementation?
7. What are your thoughts on a Nairobi River Basin authority?
8. Would you like to share any additional thoughts that I might have missed all through this research?

Group activity (Brainstorming).
❖ River sustainability management
How can we manage the river sustainably?
How can we prevent an on/off river restoration process?
❖ Social Learning opportunities and outcomes:
What have you learnt from this experience? Have you acquired new skills or knowledge?
Has participation in this project influenced your thinking or attitude about the river, your neighbours, river restoration?
Are there good examples of ways you have been able to link your learning experience with your everyday life?
❖ Meaningful public participation: public participation and engagement
Stakeholder interaction- who are the river stakeholders and how we bring them all on board to create a participatory process?
What should be an ideal public or community engagement process in policy or decision making?
How can you meaningfully engage the public in river rehabilitation to drive a sense of ownership?
INFORMED CONSENT FORM

Project Title: River Restoration in Nairobi, Kenya: Exploring Public Participation and Learning Outcomes

Principal Investigator: Regina Sobowale, Masters student, Natural Resources Institute, Clayton H. Riddell Faculty of Environment, Earth and Resources, University of Manitoba.

Sponsors: Social Sciences and Humanities Research Council of Canada (SSHRC)
Government of Manitoba/University of Manitoba (Manitoba Graduate Scholarship)

Research Advisor: Dr. John Sinclair, Professor, Natural Resources Institute, Clayton H. Riddell Faculty of Environment, Earth and Resources, University of Manitoba.

Please read this information carefully
This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

1) Project summary: This project titled “River Restoration in Nairobi, Kenya: Exploring Public Participation and Learning Outcomes” is carried out as part of a requirement to complete a Masters in Natural Resources Management (M.N.R.M) at the University of Manitoba. Within the developing world context, little has been researched about river restoration activities, largely because these initiatives have been quite unpopular. I find it impressive that Kenya has chosen to invest in and restore river ecosystems. The research focuses on exploring the Nairobi river restoration project, its implementation and progress so far. The overall purpose of my research is to examine the public participation and social learning needs and outcomes of the Nairobi river rehabilitation and restoration project. This research would contribute to a clearer understanding of the place of community participation in river rehabilitation and restoration in a developing context.

2) Data gathering procedure and storage: I (the principal researcher) plan to conduct my research in Nairobi city park. In order to fulfill my research objectives, I will be interviewing, Nairobi River Basin Project (NRBP) partners, government officials, community organizations and members. Should individuals agree to participate in this study, they will be interviewed on river restoration initiatives they participated in such as planning and implementation, their contributions
and learning opportunities and outcomes. I will be conducting one workshop that will involve the 
people I have interviewed. I expect to invite about 8-10 people from the pool that I interview. Data 
collected through notes and recordings from a digital device will be stored in password-protected 
computer files and hard copies will be stored in a locked cabinet and destroyed immediately after 
being typed into the computer. No digital recording devices will be used or photographs taken 
during interviews or group exercises without the participant's consent. The contact information 
database, the identification numbers, field notes and logs as well as the audio files will be destroyed 
by December 26th, 2022.

3). Location and Time Requirements: The interview will take approximately 45-60 minutes, 
will occur during regular working hours (8:00 am – 4:00 pm) and will be conducted in your 
preferred location. Most of the activities in this study require participants’ engagement by 
answering interview questions. The interview may be recorded using an audio device if you permit 
this. Handwritten notes will also be taken.

4). Participation/Withdrawal: Participation in this research is entirely voluntary and with no 
financial compensation. You may decline to participate and also decline to answer question(s) 
during the interview. You are only expected to answer according to your knowledge, and if you 
do not know an answer or do not want to answer, any question may be skipped. You may choose 
not to participate or may end the interview session at any time without any negative consequences. 
You can stop participating in this project at any time not before 30th June 2018 as I will have 
carried out a good deal of my data analysis by that time.

5). Confidentiality: Information gathered during the course of this research will be kept 
confidential. All collected data will be coded and kept in a safe locked in a cabinet, or in a locked 
cabinet in my home. Only the principal researcher (myself), and my research advisor will have 
access to the individual interviews and the name of the interviewees. All data will be identified 
only by code number with the code key stored separately to ensure a direct linkage can be made 
between individuals and the raw data. Unless otherwise instructed, you will be asked to choose or 
create an imaginary name. In the workshop, confidentiality and anonymity will not be possible 
due to the presence of other participants. However, participants’ names and direct quotes will only 
be revealed in future publications with their consent.

7). Result Dissemination: Before leaving the field, I will engage you and other participants in 
workshop discussions to ensure that my research findings are accurate, to make necessary 
adjustments if need be, and to be sure that I am duly aware of them. This will also be done through 
member checking where I will provide a copy of your interview responses to you to be sure they 
accurately capture your thoughts. I will be disseminating results from this research by posters, 
workshops, academic conferences, by publication in academic journals, as well as through a 
Master’s Thesis. A copy of my thesis will be made available to your organization and to 
community members if requested.

8). Risks and Benefits: There are no risks associated with participating in this research. Possible 
benefits of this research include; opportunities for community members to share their views about 
river restoration and improved restoration activities based on those views and opportunities to 
learn and share experiences related to river restoration that planners can learn from. By
participating in this research, I hope participants will gain insights about river ecosystem challenges and the importance of participation and contributions to effective resources.

9). Feedback: Should you require a copy of the notes and recording that I took during the interview I will be willing to provide it to you. An overview of the study will be communicated to you upon request either by email or post.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way. This research has been approved by the Joint-Faculty Research Ethics Board - JFREB. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Coordinator (HEC) at XXX. A copy of this consent form has been given to you to keep for your records and reference.

I, ______________________________, consent to participate in this research:

(Participant name printed)

Participant Signature Date

Verbal consent sought and received: ☐

Consent: Please, indicate which of the following items you agree with:

☐ Yes, I agree to have the interview recorded using an electronic audio recording device.

☐ No, I do not agree to have the interview recorded using an electronic audio recording device.

Verbal consent sought and received to use audio recording device during interview: ☐

☐ Yes, I agree the researcher can take notes during this interview

☐ No, I do not agree that the researcher can take notes during this interview/workshop.

Verbal consent sought and received to take notes: ☐

☐ Yes, I agree that the researcher may cite my name and directly quote me in this thesis, future publications and presentations. I understand that, in that case, it will be possible for others to recognize me

☐ No, I do not agree that the researcher may cite my name and directly quote me in this thesis, future publications and presentations. I understand that, in that case, it will be possible for others to recognize me
Verbal consent sought and received: □

□ Yes I agree that the researcher may directly quote me using an imaginary or pseudonym name instead of my real name. (Please feel free to answer this item at the end of the interview, and to provide a pseudonym: ____________________).

□ No 4) I do not agree that the researcher may directly quote me using an imaginary or pseudonym name instead of my real name.

Verbal consent sought and received: □

□ Yes □ No 6) I wish to receive a summary of this interview/workshop.

Verbal consent sought and received: □

Would you like to participate in a workshop? □ Yes □ No

Please provide the means (mailing address or email) through which you want to receive a final copy of my thesis

__________________________________________________

Participant’s Signature                             Date

__________________________________________________

Researcher’s Signature                             Date
APPENDIX 8: KENYAN PARTICIPANT INFORMATION AND CONSENT FORM

Title of Study: River Restoration in Nairobi, Kenya: Exploring Public Participation and Learning Outcomes

Principal Investigator and institutional affiliation: Omotuyole Regina Sobowale

Master’s Student; University of Manitoba, Winnipeg, Canada

Co-Supervisor and institutional affiliation:

Dr. John Sinclair, University of Manitoba, Canada

Dr. Harry Spaling, Kings University, Canada

Prof. Jesse Njoka, University of Nairobi

INTRODUCTION

I would like to tell you about a study being conducted by the above listed researchers. The purpose of this consent form is to give you the information you will need to help you decide whether or not to be a participant in the study. Feel free to ask any questions about the purpose of the research, what happens if you participate in the study, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When we have answered all your questions to your satisfaction, you may decide to be in the study or not. This process is called 'informed consent'. Once you understand and agree to be in the study, I will request you to sign your name on this form. You should understand the general principles which apply to all participants in research: i) Your decision to participate is entirely voluntary ii) You may withdraw from the study at any time without necessarily giving a reason for your withdrawal iii) Refusal to participate in the research will not affect the information you are entitled to, including a summary of the research findings. We will give you a copy of this form for your records.

May I continue? YES / NO

This study has approval by The Kenyatta National Hospital-University of Nairobi Ethics and Research Committee protocol No. ____________________________

WHAT IS THIS STUDY ABOUT?

The researchers listed above are interviewing individuals who are participating in the Nairobi River Rehabilitation and Restoration project. The purpose of the interview is to find out your contributions and level of engagement in this restoration project. Participants in this research study will be asked questions about their knowledge about the river restoration planning, participation, challenges of participation and learning outcomes. The researcher is also affiliated with the University of Nairobi.
Interviews will be held with 20 - 25 participants involved in the restoration project, 7-10 (Nairobi River Restoration collaborating partners), 5 community organizations, 10 individuals chosen based on their level of information and participation in the restoration activities. We are asking for your consent to consider participating in this study.

WHAT WILL HAPPEN IF YOU DECIDE TO BE IN THIS RESEARCH STUDY?

If you agree to participate in this study, the following things will happen:

You will be interviewed by a trained interviewer in a private area such as your home, office or where you feel comfortable answering questions. The interview will last approximately 45-60 minutes. If it takes too long, you may ask for the interview to be continued at another time. The interview will cover topics such as Nairobi River restoration planning, monitoring and evaluation, your contributions in the project and learning outcomes. After the interview has finished, we may ask for any documents you might be willing to share. We may also want to take pictures.

We will ask for a telephone number where we can contact you if necessary. If you agree to provide your contact information, it will be used only by people working for this study and will never be shared with others. The reasons why we may need to contact you include visit or clarifying what you told us or sending a summary of the research.

ARE THERE ANY RISKS, HARMS DISCOMFORTS ASSOCIATED WITH THIS STUDY?

Research involving people has the potential to introduce psychological, social, emotional and physical risks. Effort should always be put in place to minimize the risks. One potential risk of being in the study is loss of privacy. We will keep everything you tell us as confidential as possible. We will use a code number and code name to identify you in a password-protected computer database and will keep all of our paper records in a locked file cabinet. However, no system of protecting your confidentiality can be absolutely secure, so it is still possible that someone could find out you were in this study and could find out information about you.

Also, answering some questions in the interview may be uncomfortable for you. If there are any questions you do not want to answer, you can skip them. You have the right to refuse the interview or any questions asked during the interview.

It may be embarrassing for you to discuss your individual contributions to the river restoration projects. We will do everything we can to ensure that this is done in private and respectfully. Furthermore, all study staff and interviewers have training in doing interviews and will show their respect throughout.

ARE THERE ANY BENEFITS BEING IN THIS STUDY?

You may benefit by receiving a summary of the research findings in the form of a newsletter. You will not be identified individually; the findings will represent results from all research participants. Also, the information you provide will help us better understand the relationship between public participation and successful government policies. This information is a contribution to resource management.
WILL BEING IN THIS STUDY COST YOU ANYTHING?

There is no cost to you.

WILL YOU RECEIVE MONEY OR A REFUND FOR ANY MONEY SPENT AS PART OF THIS STUDY?

No payment or refund is provided as part of this study.

WHAT IF YOU HAVE QUESTIONS IN FUTURE?

If you have further questions or concerns about participating in this study, please call, send a text message or email the researchers at the number below:

For more information about your rights as a research participant you may contact the Secretary/Chairperson, Kenyatta National Hospital-University of Nairobi Ethics and Research Committee Telephone No. XXXXX . The study staff will pay you back for your charges to these numbers if the call is for study-related communication.

WHAT ARE YOUR OTHER CHOICES?

Your decision to participate in research is voluntary. You are free to decline participation in the study and you can withdraw from the study at any time without injustice or loss of any benefits.

PARTICIPANT’S STATEMENT

I have read this consent form or had the information read to me. I have had the chance to discuss this research study with a researcher. I have had my questions answered in a language that I understand. The risks and benefits have been explained to me. I understand that my participation in this study is voluntary and that I may choose to withdraw any time. I freely agree to participate in this research study.

I understand that all efforts will be made to keep information regarding my personal identity confidential.

By signing this consent form, I have not given up any of the legal rights that I have as a participant in a research study.

I agree to participate in this research study: Yes No
I agree to provide contact information for follow-up: Yes No

Participant printed name:

________________________________________________________________________________________

Participant signature / Thumb stamp

________________________________________________________________________________________ Date

Researcher’s statement

I, the undersigned, have fully explained the relevant details of this research study to the participant named above and believe that the participant has understood and has willingly and freely given his/her consent.
Researcher's Name: ___________________________ Date: ____________

Signature: ____________________________________________

Role in the study: ___________________________ [i.e. Research assistant who explained informed consent form.]
Witness Printed Name (If witness is necessary, A witness is a person mutually acceptable to both the researcher and participant)

Name _______________________________ Contact information __________________

Signature/ Thumb stamp: ___________________________ Date: ________________