The Roles of Strategic Environmental Assessment and Learning in Planning for Successful Community-Based Solid Waste Management in Kenya

By

Patricia N. Dennis

A Thesis submitted to the Faculty of Graduate Studies of

The University of Manitoba

in partial fulfillment of the requirement for the degree of

MASTER OF NATURAL RESOURCES MANAGEMENT

Clayton H. Riddell Faculty of Environment, Earth, and Resources

Natural Resources Institute

University of Manitoba

Winnipeg

Abstract

My research explored how strategic environmental assessment (SEA) is used as a tool for planning in relation to solid waste management (SWM) in Kenya. Two SEA cases- Nairobi Urban Masterplan (NIUPLAN) and Kinanie Leather Industrial Park (KLIP) were selected for analysis. The research was conducted utilizing interviews with local community members, SEA practitioners and government officials, participant observation and focus groups. In relation to the SEA of SWM, results show that the two SEAs considered the SWM in their plan process but that this was not initiated at the early strategic stage of the process. Findings show that the SEA process is still evolving in Kenya, with noted strengths (e.g., freedom from coercion, equal opportunity to participate, and inclusion of the most affected public), and areas for improvement (e.g., scope of consideration of the SEA, SEA capacity and training, SEA reporting).

Acknowledgements

I write with so much delight as I reflect on the successful completion of this project! All thanks to almighty God, who saw me through and never let me down from day one to finish. May your holy name be praised forever! I am equally grateful to my parents- Sir and Lady G.O Ozoike, most especially my mum, Gloria Ozoike, for believing in me, for the support, prayers, advise, and counselling. I never saw you throughout my study period but my prayer is that God will continue to preserve your lives to continue to eat the fruit of your labor. Amen

I beg to switch this proverb around- 'behind every successful woman, there is always a GOOD man!'. Dear Somtochukwu A. Dennis, thank you for being a great pillar, a strong backbone, a partner, and above all, my husband. Your confidence in me never dropped for a second. Even while I was far away in Kenya for my fieldwork, you made it look so easy. I adore the feet you thread on. May the good lord continue to strengthen our marriage. I love you! To our unborn child- Kenechukwu Andre Dennis. We haven't met you but your 'kicks' sure gave me the moral support I needed to complete my thesis. We love you son, and we are ready to be the best mum and dad you'd ever ask for!

A special thanks to all my siblings Anne, Catherine, Theresa, Francisca, and Gilbert (Jr) who, over the years, have taught me that blood is always thicker than water- no matter the distance. I appreciate all your prayers my darlings. May God bless you all! A big thank you to all my Kenyan participants and friends who, within a short period, accommodated me, loved me, and showed me support throughout my stay. I enjoyed your *Ugali*, *Chapatti* and *Matumbo* stew, and I wish I could bring some home. Thank you all for your cooperation. May God bless you all!

I also wish to thank all my contacts at NEMA, GIBB Africa, EPZA, NCC, KIRDI and KLDC. Thank you for showing me the way around, and most especially for your positive suggestions, guidance, and views in choosing safe study areas. I appreciate you all! It will be an unsolicited accusation on my person if I fail to appreciate the efforts and strength of my advisor, Dr. John Sinclair, and committee members, Dr. Harry Spaling, Dr. Francis Zvomuya, and Miss. Heidi Walker. John, one great thing about you is that your wealth of experience never deters you from being that ever-supportive advisor. Thank you so much for your tremendous contributions. I appreciate you always! Harry and Heidi, even though we had only met briefly in the field, may I mention that your contacts and overall 'field-support' was valuable. Francis, thank you for taking out time to contribute to the success of my thesis. I wish to thank the Social Science and Research Council of Canada that has funded this research. You made the journey smoother. Thank you!

Finally, to my NRI friends, 'allies' and colleagues, (you know yourselves), thank you for making Canada more like home for me. You are all awesome!

Table of Contents

List of Tables

List of Figures

List of Abbreviations and Meanings

CBO- Community-Based Organizations

CBSEA- Community-Based Strategic Environmental Assessment

CCN- City County of Nairobi

CDM- Clean Development Mechanisms

EA- Environmental Assessment

EMCA- Environmental Management and Coordination Act

EPR- Extended Producer Responsibility

EPZA- Exporting and Production Zones Authority

IAIA- International Association of Impact Assessment

ISWM- Integrated Solid Waste Management

KLIP- Kinanie Leather Industrial Park

MRFs- Material Recovery Facilities

NIUPLAN- Nairobi Integrated Urban Masterplan

NEMA- National Environmental Management Authority

NGO- Non-Governmental Organization

OECD- Organization for Economic Cooperation and Development

PPP- Policy, Plan and Program

SEA- Strategic Environmental Assessment

SWM- Solid Waste Management

WTE- Waste to Energy

UNEP- United Nations Environmental Program

UNIDO- United Nations Industrial Development Organization

USNEPA- United States National Environmental Protection Agency

Baraza- a Swahili name connoting public meetings and gatherings

Takataka- garbage or solid waste

Shamba- a garden, usually located within a family backyard

Sukumawikis- Kale vegetables

1 Introduction

1.1 Background

Environmental issues such as solid waste management (SWM) have become an overriding factor among the various issues that threaten the socio-economic and political agendas of most economies in Africa (UNEP, 2010; Simelane and Mohee, 2012). This is because if not properly managed, solid waste has the potential to deface the beauty and aesthetics of cities, towns and villages, while also hampering social, economic and political development (Nhamo, 2011; Henry et al., 2006; Pires et al., 2011). Further, while rapid urbanization resulted in increased solid waste generation requiring proper management, many cities in East African countries, particularly Kenya, have been unable to keep up with the required level of management. This is evidenced by improper collection and disposal of solid waste in community dumpsites owing in part to limited technology as well as lack of sincere enforcement of environmental regulations (Henry et al., 2006; UNEP, 2010). Thus, rectifying SWM issues requires not only a change in citizen attitudes towards how SWM is viewed, but also the adoption of community-led participatory approaches to developing and implementing national waste management plans to reduce and properly manage the ever-increasing amount of solid waste (Nasrabadi et al., 2008; Oberlin and Sza´nto, 2011).

A proposed approach to dealing with SWM issues that has been gaining resonance in African countries is the Integrated Solid Waste Management (ISWM) (UNEP, 2013). ISWM encourages the reduction, reuse, recovery and recycling of waste substances over conventional landfilling and incineration methods (UNEP, 2013). The goals of ISWM are to prevent pollution and contamination of natural resources, recover energy from waste (WTE), as well as reduction of gas emissions associated with landfilling and incineration methods (Simelane and Mohee, 2012; Hoornweg and Bhada-Tata 2012). In addition, the ISWM approach encourages and advocates for

enhanced public participation in the development and implementation of solid waste management plans as part of overall environmental planning and assessment decisions of a country (Desmond, 2009). Environmental Assessment (EA) is often central to waste management and planning especially for large scale infrastructures like landfills and incinerators that might be part of a ISWM program (Dermol and Kontic, 2011; Dennis and Agamuthu, 2013). EA is defined as a process through which environmental impacts of projects are considered and mitigation strategies are developed (Hanna, 2009; Devlin et al., 2005). To help direct a shift in environmental governance towards sustainability outcomes, proactive forms of EA have been developed that ensure environmental considerations are incorporated into the early stages of decision making process. One of such proactive approaches is Strategic Environmental Assessment (SEA) which considers the impacts of policies, plans and programs (PPPs) before they are implemented and before an EA project is undertaken (Therivel, 2010; Noble, 2005).

Initially, SEA was promoted as an extension of EA principles and practices to PPPs but now, it has added value to the process of evaluating the impact of potential projects on the environment by analyzing PPP at an early stage, preparing environmental reports and carrying out of public participation and consultation processes, thus setting the context and framework for EAs at the project level (Therivel, 2010). In terms of waste management and planning, SEA can also play a very important role in determining long term sustainable strategies for SWM that might be actioned through ISWM approaches. Thus, SEA has high potential to involve people early in decision and planning cycles of environmental activities that might affect them (Desmond, 2008; Josimovic´ et al. 2014).

Given these potential benefits of SEA, and to achieve sustainable development without harming the environment (NEMA, 2002, 2006), the government of Kenya has legislated EA and

SEA tools to help facilitate the integration of environmental and sustainability principles in its developmental agenda. The Kenyan SEA framework, legislated in 2003, is relatively young in experience and tradition, having been applied to about 40 SEAs as of October 2015 (NEMA, 2015). Of the 40 completed SEAs, about 8 SEAs considered SWM as an important component of new community planning. These cases are largely related to new city developments such as Tatu City Structure Plan, Red Coral Development, Nairobi Urban Master Plan etc. (NEMA, 2015; Tatu City Structure Plan, 2011; Red Coral Development, 2013). Although SWM was considered in these SEAs, no data indicates whether the outcomes of these SEAs were aimed at achieving the long-term sustainability of environmental resources of communities who are directly affected by waste problems, as the literature suggests they should (Gauthier et al., 2011; Diduck et al., 2012). This study therefore intends to explore how these factors were considered in the SEAs that incorporated solid waste management.

Also, an important component of EA, SEA and ISWM is public participation. Public participation can be simply defined as engaging the public in decision-making processes (O'Faircheallaigh, 2010; Doelle and Sinclair, 2006). The literature recognizes that participation, especially at the community level, can ensure more open, democratic and transparent decision-making processes by increasing population representativeness, and to help identify conflicts which could be eventually resolved through learning (Gauthier et al., 2011, Sinclair et al., 2008; Diduck et al., 2012). Transformative learning is an adult development process that reflects how adults learn to think critically on underlying assumptions and habits of expectations as a means for changing one's worldview (Mezirow, 1998). As an important process in public participation, transformative learning can facilitate more collective fundamental individual and social learning experiences that could enable transition to sustainability (Sinclair et al., 2008). Participation is

particularly important in relation to SWM since the people produce the waste must be involved in systems for reducing, reusing and recycling it (Ahmeda and Ali, 2005; UNEP, 2010). In addition, participation has been shown as being key to a successful EA and SEA especially in Kenya (Spaling et al., 2011; Walker et al., 2014).

1.2 Purpose and Objectives

Given this background, the purpose of my research is to explore how SEA is being used as a tool for future planning in relation to participatory SWM in Kenya over the past 5 years (2011-2015).

My proposed objectives include the following:

1. To evaluate completed SEAs against standard SEA practice, and best practice solid waste management procedures;
2. To examine the extent of participation in the SEA process, and in the resulting SWM plan;
3. To document participants' learning outcomes about SEA and SWM as a result of their involvement in the SEA process; and,
4. To make recommendations for any needed amendments to SEA process in Kenya and the incorporation of best practice SWM in new developments.

1.3 Research Significance

SEA and associated public participation are key elements in national decision-making processes aimed at sustainability (Therivel, 2010; Noble 2005). For example, in two completed SEAs in Kenya, consultations were carried out at the early and later stages of the SEAs to inform the stakeholders about the proposed plan, and to provide opportunities for amending the plans. Stakeholders' views on the proposed SWM options were collected including potential positive/negative impacts, as well, local knowledge on any sensitive areas within the plan scope

were also considered (Tatu City Structure Plan, 2011; Red Coral Development Plan, 2013; Nairobi Urban Master Plan, 2013). However, SEA and related participatory processes are still unclear in Kenya and there is a need for a deeper understanding of its implementation and particularly its potential to encourage effective and efficient SWM alternatives chosen in the SEAs. Thus, this research aims to contribute not only to the existing SEA literature, in relation to the best practice in Kenyan context, especially regarding public participation, but also to determine how best practice SWM may be incorporated into planning for new developments.

1.4 Methods

This research was approached using a participatory worldview, following a qualitative research design and conducted utilizing a case study strategy of inquiry. Owing to the emergent nature of SEA in resource management (Diduck et al., 2012) as well as in waste management (Dennis and Agamuthu, 2013), a qualitative research design was used for this research to explore human experience (Creswell, 2014). A participatory approach allowed community respondents affected by waste issues, as well as waste policy actors, to share their own experiences regarding waste management, how they have been approached and how people were involved in decisions about new approaches. The initial study stage included examining completed SEA reports from the National Environment Management Authority (NEMA) in Kenya, to establish the extent to which best practice SEA was followed in the context of SWM. The SEA reports also aided in choosing appropriate detailed case studies for the research. The literature review provided major SEA guidelines and evaluation criteria.

Data collection methods include: document review, semi-structured interviews, participant observation and focus groups discussion. These methods were useful for the interactive and adaptive collection of data from participants (Creswell, 2014; Bernard, 2009). Document review

and semi-structured interview provided data related to objectives 1 and 2, while semi-structured interviews, participant observation and a focus group provided data related to objectives 2, 3 and 4. The methods are detailed in Chapter 3 of the thesis.

1.5 Organization of the study

This research is organized into seven chapters. Following the introductory chapter is a review of literature regarding public participation and learning in EA, SEA, as well as waste management. The third chapter provides details on the research methods and techniques used in conducting the study, as well as data collection methods that fulfilled each research aim. The fourth chapter of the thesis presents the results related to SEA and SWM options in Kenya in comparison to standard practice, while chapter five outlines public participation in relation to the case studies that were selected. Discussions on learning conditions and outcomes of the case studies are presented in chapter six while the final chapter discusses conclusions and recommendations based on the study's findings. A copy of my research findings will be disseminated to all participants in the research, including the waste-based CBOs. At the end of my research, a poster containing the results, conclusions and recommendations will also be made available to the participating communities. I also plan to develop a journal article from my work following the lead of other students from the NRI that have done work on EA and SEA in Kenya.

2 Strategic Environmental Assessment, Solid Waste Management, and Consequent Participation and Learning

2.1 Strategic Environmental Assessment: Origins and Principles

Stemming from the US National Environmental Protection Agency (NEPA), which later became a law in the 1970s, the concept of EA is now one of the most accepted environmental management tools. EA was introduced to meet several challenges, such as integration of environmental components in planning and decision-making processes, provision of information on the state of the environment to enhance deeper and more formalized knowledge, and finally, to enable increased participation of citizens in decision making and awareness about environmental issues (Noble, 2005; Morrison-Saunders and Bailey, 1999). There is no internationally accepted definition of EA, however the International Association of Impact Assessment (IAIA) and the UK Institute of EA (UKIEA) defines Environmental Assessment as:

> The process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of developmental proposals prior to major decisions being taken and major commitments made (IAIA and IEA, 1999)

EA was established with the aim of integrating environmental considerations in planning and decision making where initiatives on environmental assessment were initially focused on "projects" (EEC, 1985; Morrison-Saunders and Fisher, 2006). However, and more proactively, as the complexity of sustainability is better understood, as well as the shortcomings of project level EA, many policy initiatives are now focused on the assessment of policies, plans and programs (PPPs), particularly since the implementation of the European Directive 2001/42/EC regarding SEA (EU, 2001; Therivel, 2010; Noble, 2005). This directive made provision for the implementation of a procedural tool called SEA that must be applied at an early stage of the decision-making process for PPPs that may have significant effects on the environment, and on sustainability more generally (EU, 2001). Having become one of the most widely discussed EA

process in modern times, Sadler and Verheem (1996) provide a commonly cited definition of SEA as:

> A systematic process for evaluating the environmental consequences of proposed policy, plan or program initiatives and appropriately addressed at the earliest appropriate stage of decision making on par with economic and social considerations (Sadler and Verheem, 1996, p. 27)

The above definition best explains the basis of SEA in terms of why and how the tool can be used. More so in the literature, various discussions of how the tool has been implemented, as well as its general acceptability in both national and international contexts prompt me to use the definition as a working definition in this research, and as appropriate in the context of this study (Sadler, 1996; Sadler et al., 2011, Therivel, 2010; Fisher, 2007). In terms of decisions that affect the environment, SEA is usually carried out to provide a foundation for environmental decision making and planning that ensures that all alternative options are duly considered at the earliest stage where there are opportunities for flexibility of decisions (João, 2005; Schmidt et al., 2006; Jones et al., 2005).

In order words, SEA proactively asks what the preferred options are, and which of the preferred options are attainable, rather than predicting the potential outcomes of a predetermined type of action or of a project (Noble, 2000; Dalal-Clayton and Sadler, 2005; Therivel 2000). In addition, SEA extends the late timing of an EA project in a decision cycle, as compared to project EA which allows for little modification of the chosen options or alternative ways of thinking about how to address the problem or opportunity at hand (Noble and Harriman-Gunn, 2009; Noble, 2000; Therivel 2000). Thus, when there are early considerations of environmental issues of PPPs, strategic actions taken during the SEA allow for a sustainability framework to be developed and implemented before irreversible decisions are taken about the selected part of action (Sinclair and Diduck, 2001; Noble and Harriman-Gunn, 2009; Noble, 2000).

To effectively attain sustainability goals, environmental concerns as well as other aspects of development (e.g., social/cultural, economic, market requirement, financial and technological) must be integrated into SEA decision-making processes (Wood and Dejeddour, 1992; Fischer, 2007). Moreover, João (2005) and Davidovic (2014) argued that SEA can also facilitate improved consultation processes among decision makers, proponents, stakeholders and other interested organizations and individuals about the PPPs that might affect them.

2.1.1 Characteristics and benefits of SEA

The key to a properly designed SEA of PPPs is an examination of alternative approaches and opportunities. For example, in the context of a national waste management policy, the different approaches to waste management would be considered to provide broad advice on how to avoid irreversible mistakes and improve sustainability outcomes before project-level decisions are made (Noble, 2005; Josimovic´ et al., 2014). A plan could be a local waste development plan; and a proposed program could be a coordinated series of landfills (Therivel, 2010; Salhofer et al., 2007). In the context of SEA, a policy can be defined as roadmap or guidance for action, for example, whether to promote the development of landfill sites in a country (Desmond, 2009). A plan can be defined as a set of linked proposed actions with a specific timeframe that will implement the policy (e.g. how much poverty to be eradicated in Kenya by 2030 (Vision 2030; NEMA, 2015; UNEP/GOK, 2013). Finally, a program can be defined as a set of proposed projects in a particular area that will implement the plan, for instance a proposal to implement Integrated Solid Waste Management (ISWM). For example, in the Nairobi Urban Waste Management Plan, there are programs developed to combat solid waste problems as steps to achieve the Kenyan Vision 2030 (Wood and Dejeddour, 1992; NEMA, 2015). Eventually, national decision-making processes would be considered in such an SEA, while recommendations on policy and planning

requirements, social and local economic benefits which will help to shape the overall effectiveness of the SEA, will be made (João, 2005; Noble, 2005).

The common elements in SEA discussions are often strategy-based, vision and alternatives focused, target-based, integrated, and tiered (Wood and Dejeddour, 1992, Noble, 2000). A strategy-based approach is one in which specific long-term objectives are defined and analyzed, and the courses of action and resources necessary to achieve these goals are chosen (João, 2005). In other words, Therivel (2000), describes the strategic element as the guiding set of principles and objectives that enables environment and development targets to be incorporated into a set of broad alternatives, or PPPs, and as a tool for development and decision making (João, 2005). When vision, in terms of forecasting issues and problems and desired objectives are established in an SEA, a wide range of alternatives are proposed to solve the problems and meet the set objectives and principles. Afterwards, the best option is selected at an early phase of the decision-making process to proactively mitigate likely negative outcomes and enhance positive outcomes (Sadler, 2000; Noble, 2000). Moreover, Mitchel (1997) argues that the absence of a vision in a proposed development might lead to any choice being made, and when a set of goals is absent in a proposed PPP, rather than assessing and choosing the most desirable alternative, one might only assess the likely impacts typical in a project EA.

SEA has also been identified as situated within a tiered planning process, where the policy, plan and program hierarchy are linked to the lower level project EA (Therivel, 2010; Noble, 2000). In order words, within this tiered framework, the SEA of policy precedes and informs the SEA of plans which subsequently informs the SEA of programs, which in turn informs the EA of projects (João, 2005; Noble, 2000). More so, EA at the project level may also affect and inform new or potential developments or modifications of PPPs by reactively assessing the likely consequences

of a predetermined course of action. Thus, SEA conducted within the tiered process informs effective decision-making such that SEA carried out at a higher-level PPP allows for more efficient and effective project level EAs to be subsequently undertaken, saving time and resources (Thérivel 2010, João, 2005).

Integration as a component of SEA, describes the linkage between the strategic actions taken at each SEA stage (João, 2005). The integrated characteristic of SEA not only reveals strategic decisions taken at each stage, but also incorporates environmental, social and economic considerations into SEA, to reach sustainability goals and to achieve the best strategic decision possible (Fisher, 2007; João, 2005, Noble, 2000). Haq (2004) and João (2005) describes this type of integration in SEA as including initiatives, objectives, environmental policies, and citizen participation that can influence the strategic actions taken, and that can reshape these strategic actions to include environmental and sustainability issues. Thus, when environmental considerations are incorporated at an early stage in the development of a PPP, SEA can improve a strategic action irrespective of whether such actions have negative or positive impacts (João, 2005). SEA should proceed early enough and be integrated in all stages of decision-making process, while identifying less impacting alternatives and modifications to the strategic action (Levett and Thérivel 2003; Noble, 2000).

In sum, Therivel (2010) points out two important aims of SEA: it must evaluate broad alternatives during the assessment process, and it must improve strategic decisions of the PPPs (i.e. set objectives must be met). Other commonly mentioned principles and benefits of SEA in the literature include:

- Encouragement of the meaningful public participation of stakeholders due to involvement in planning levels decision pre-project (IAIA, 2002; Therivel, 2010; Partidario, 1996)

- Emphasis of key environmental and sustainability markers (Dalal-Clayton and Sadler, 2005; Therivel, 2010; Noble, 2000)
- Best option identification and selection from a range of alternatives (Partidario, 1996; Wood and Dejeddour, 1992, Sadler, 2006)
- Integration with project EA once the SEA is complete makes the project level more efficient and effective (João, 2005, Fisher, 2007, Therivel, 2010)
- Offers transparent, open, and cost and time effective decision making (Dalal-Clayton and Sadler, 2005; Therivel, 2010, João, 2005)
- Is an ongoing process as opposed to a closed-end project EA (IAIA, 2002; Therivel, 2010; Partidario, 1996, Noble, 2005, Sadler, 2006)

The benefits of SEA are numerous, but the full integration of all components is vital to effectively and efficiently achieve sustainability goals while reducing likely environmental consequences (Sadler, 2006; Fisher, 2007). More so, identifying the benefits of SEA does not only address environmental issues that are best resolved at the policy or program level, but also, provides a platform to continually improve on SEA and to meet its intended outcomes (Sadler, 2006; Therivel, 2010)

2.1.2 SEA in Developing Countries

In the past, SEA was predominantly used in developed countries, but now it is increasingly adopted across many different countries and economies both in the developed countries and developing countries (Alshuwaikhat 2005). With the joint efforts of the United Nations, and the Organization for Economic Co-operation Development (OECD) development assistance is increasingly being made available to promote and incorporate environmental and sustainability objectives into higher level decision-making of PPPs (UNEP, 2002; OECD, 2012). Accordingly,

the 2005 Paris Declaration on Aid Effectiveness summoned all donors and partners to work together to develop and promote viable approaches for SEA at both the sector and national levels (PDAE, 2005). Following this, the OECD Development Assistance Committee (DAC) guidance on applying SEA was endorsed in 2006 after a massive turnout and collaboration among DAC members including representatives from developing countries, the UNDP, the United Nations Environment Programme (UNEP), the World Bank and several other agencies (OECD, 2012).

In most developing countries, poor policies, planning or decisions often lead to resource degradation and weakened development processes, which in turn affect mostly poor people (OECD, 2012; Davidovic, 2014). Thus, the shift towards a more worthwhile development policy and planning process at higher levels of decision making will not only help to control environmental degradation, but also enable a long-term achievement of the Millennium Development Goals (MDGs), since the seventh MDG obliges that the principles of sustainable development must be an integral part of a nation's policy and program (UNEP, 2002; OECD, 2012; Retief, 2007). Retief et al. (2008) also suggest two reasons why the integration of SEA is of critical importance to decision-making processes in developing countries. Large segments of their population solely rely on primary sector activities such as agriculture, tourism, fishing and mining for their livelihoods, and secondly, most developing countries, e.g. Brazil, Kenya and Indonesia are endowed with vast biodiversity hotspots and pristine environments that must be protected (Retief et al. 2008).

Many parts of these countries are vulnerable and are often affected by environmental degradation, and local people are often excluded from decisions taken around how natural resources are managed (Alshuwaikhat 2005, Kjorven and Lindjhem, 2002). Therefore, environment and sustainability, using SEA and participatory approaches, are important principles

to be incorporated into strategic decision-making in these countries to achieve a long-term environmental conservation and poverty reduction (Retief, et al., 2008; Kjorven and Lindjhem, 2002; Davidovic, 2014).

In the face of its emergence in developing countries, some barriers also have been identified that appears to limit the wide acceptance and effectiveness of SEA (Kjorven and Lindjhem, 2002). Among these barriers are lack of training and insufficient funds, lack of meaningful participation in decision-making process, lack of will of government agencies to assume responsibility for the process, limited amount of evidence of SEA effectiveness, lack of awareness of impacts and benefits of SEA, and insufficient environmental information and data (Sinclair et al., 2007; Retief, et al., 2008; Kjorven and Lindjhem, 2002). To overcome the barriers associated with effective implementation of SEA, community-based approaches are increasingly considered valuable at either the policy, planning or the least program level (Sinclair et al., 2009; Spaling et al., 2011; Josimovic´, 2014). For example, Spaling et al., (2011) documented a two-case participatory community-based environmental assessment (CBEA) in Kenya and Tanzania.

This study showed that broader representation including women and youth, access to information, fair cost-sharing, and adequate notice were provided. This enabled local people to effectively participate in information and data gathering activities whereby community participants themselves identified the likely consequences, assessed best alternatives, and suggested mitigation options that led to a strengthened CBEA (Spaling et al., 2011). The study reported other benefits such as instrumental and communicative learning outcomes, satisfaction with the CBEA process with a shift towards sustainability evidenced by tree-planting and other conservation practices. Thus, community-based approaches to EA in developing countries will not only aid in understanding how power can be devolved to communities, but also allows

communities to take on more responsibilities for assessing projects and accrued sustainability since the benefits are in their best interest (Spaling et al., 2011; Sinclair et al., 2009).

2.1.3 SEA Experience in Kenya

Kenya is a developing country in East Africa with about 33.4 million people on a land area of about 569,137 km^2 (UNEP/GOK, 2013). The country possesses vast natural resources that support different sectors of the economy that people depend heavily on to raise living standards and to generate government revenue (NEMA, 2006; World Bank, 2006). Since the enactment of the Environmental Management and Coordination Act (EMCA) which mandates all environmental and sustainability principles be incorporated into policies, plans and programs (GOK, 2003), Kenya's SEA has since been evolving and expanding with about 40 cases either completed or in process as of close of 2015 (NEMA, 2015). Initially, SEA in Kenya was lacking the legal requirements since EMCA was established to address environmental issues by making provision for "public participation in the development of policies, plans and processes, for the management of the environment" (EMCA, 1999; NEMA, 2015). In addition, the Environmental Impact Assessment/Environmental Audit (EIA/EA) Regulations of 2003 provide parameters for SEA such as SEA objectives, triggers, definitions and important contents for SEA reports (Mutui et al., 2013; Walker et al., 2014).

Under the EMCA Act (EMCA, 1999), the EIA/EA Regulation 42 (1) and (3) also provides that the lead agencies must consult with the NEMA to subject all public PPPs to SEA (NEMA, 2012, EMCA, 1999). The Regulation also oblige government and all lead agencies to incorporate best practice SEA principles in accordance with the national SEA guidelines, and international guidelines such as the OECD DAC guidance and EU SEA Directive, into national policies and in the development of sectors (NEMA, 2012; Mutui et al., 2013). Nonetheless, in 2015, the EMCA

Act was amended as a legal provision for SEA in Kenya, where section 57A provides that "all Policies, Plans and Programs for implementation shall be subject to Strategic Environmental Assessment" (EMCA, 2015). Although this depicted a breakthrough in the Kenyan SEA practice but some still view Kenya's SEA experience as nascent and that the policy will continue to evolve with practice. For instance, in an analytical description of the evolving SEA system in Kenya, Mutui et al., (2013) report that out of the 23 SEAs initiated in 2012, only about 12 had been completed and approved against 3 completed but not approved, while others were in the process of completion (NEMA, 2012; Mutui et al., 2013). They also found that only about 3 of the 23 SEAs were conducted in accordance with the Kenya SEA Guidelines with 63% authorized to undertake a full SEA study, while the rest are yet to be approved (Mutui et al., 2013).

In another study of SEA and public participation process in Kenya, Walker et al., (2014) and Walker et al., (2016), found that 39 SEAs had been completed with many more in the process of completion. Of the 39 SEA cases, two were selected and analyzed in detail with identified common strengths such as consideration of environmental and socio-economic concerns, involvement of diverse stakeholders, incorporation of SEA education component, input from the marginalized section of the public, and an overall SEA process that greatly informed EIA-led outcomes. Weaknesses that were identified were mainly on reporting, poor communication, and late initiation of SEAs that restricted the opportunities for the public to modify or shape PPP alternatives discussions. In their minds, these findings indicate a slow but maturing SEA formation in the country.

Consequently, this research aims to improve, and if possible, address the gaps in Kenya's SEA implementation process where locally executed SEAs must closely follow national SEA guidelines and best practice especially in terms of public participation, and whether the mechanisms for public

participation supports those in the regulations and guidelines (Okello et al., 2009; Onyango and Schmidt, 2007; Mutui et al., 2013, Walker et al., 2014; 2016). Moreover, the World Bank (2007) recognizes some benefits of SEA to include meaningful participation of both, but not limited to, local communities, community stakeholders and NGOs; increased government accountability; as well as individual learning. Walker et al. (2016) developed an SEA analysis framework that highlights some commonly accepted elements of participatory SEA practice situated within the Kenya context as shown in Table 1.

Table 1: Analysis Framework for Participatory SEA practice in Kenya (adapted from IAIA 2002, Fisher and Gazzola 2006, Tetlow and Haunsch 2012)

SEA Ideal	**Analysis Criteria**
1. Integrated	a) Is SEA initiated early enough to adequately inform the planning process and meaningfully involve the public? b) Is the SEA fully integrated into the planning process, throughout the entire process? c) Does the SEA address biophysical, social, and economic aspects?
2. Sustainability-led	a) Is sustainability an integral concept in the SEA? b) Is the public invited to identify alternatives to the PPP that are more sustainable? c) Does the SEA allow participants to consider the enhancement of positive impacts as well as the mitigation of negative impacts?
3. Inclusive	a) Does the process contain all the standard SEA components within which the public could engage (i.e. scoping, baseline, evaluation of impacts/mitigations, etc.)? b) Does the SEA systematically assess cumulative effects? c) Does the SEA report contain sufficient information for planners to make cognizant decisions?

4. Transparent, Accountable, Improved Governance	a) Is there evidence of learning for improved governance or institutional decision-making? b) Were SEA recommendations used to amend the PPP? c) Are there comprehensive monitoring/evaluation plans in place to encourage iterative learning?
5. Participative	a) Do the chosen methods for public participation allow for active involvement and discussion? b) Are there opportunities for participation throughout the entire process? c) Are SEA results disseminated to participants? d) Are marginalized populations invited to participate? e) Do reports explicitly show how input/comments/concerns were addressed?

2.2 Public Participation in EA and SEA

2.2.1 Overview and Benefits

Public participation is now widely accepted as critical and essential component of any acceptable EA process (IAIA, 2002; OECD 2012; Sinclair and Diduck, 2001, Petts, 1999). Public participation is a term used to describe a restructuring of power that allows citizens to be deliberately included in the political, economic and environmental decision-making processes from which they were often excluded (Arnstein, 1969; O'Faircheallaigh, 2010). According to Okello et al., (2011:217), participation is "an interactive process that involves communication, listening, consulting, engaging and partnership with the public and stakeholders to establish and deliberate on areas of agreement and disagreement in aid of decision-making" (p.217). Through public engagement in EA, the public, and especially local communities, are not only given the opportunity to participate in information-sharing activities, setting purpose and policy objectives,

and selecting best alternative programs and projects, but also to participate in mitigation processes of activity impacts that may affect them (Sinclair and Diduck, 2001; Spaling et al, 2011). As well, there is a potential for empowerment pertinent to decisions taken in SEAs of PPPs by giving a voice to poor and marginalized people and youth (OECD, 2012; Kende-Robb and Van-Wicklen, 2007)

To ascertain how meaningful a participation process is, Arnstein (1969) establishes that participation can occur at eight levels on the participation 'ladder' she developed, and depending on the level of proponent-citizen interaction. Non-participation occurs at the lower rungs of the ladder when the public compellingly accepts a proposed plan or program from the proponent with only minimum exchange of information and ideas. The middle rungs represent tokenism, with limited opportunity from the public to air their opinions and views, or to influence any decision taken by the proponents. Also at this stage, instead of implicitly involving the public, consultation often merely occurs at the superficial level to fulfill legal requirements. To meaningfully involve the public, the upper rungs suggests partnership, delegated power and citizen control as indicators of role of the public in the decision-making process. In order words, while partnership allows the public and the proponent to negotiate, delegated power and citizen control enables the participants to take full control of decision-making positions, and management of proposed actions (Arnstein, 1969).

In addition to being central to achieving sustainability, meaningful pubic engagement can ensure that power is devolved in some way to all sectors of a society if allowing for effective representativeness and giving voice to the most affected (Arnstein, 1969; Diduck et al., 2012; Doelle and Sinclair, 2001). Moreover, in their study of public participation in EA, Stewart and Sinclair (2007:162) argue that the basic objectives of public participation involve "sharing

information, involving the community at an early stage of decision making, taking community aspirations into considerations and giving the community the ability to influence the outcome of decision making". They go on to highlight various basic elements of meaningful public involvement in EA, as listed in Table 2. These objectives, when fulfilled by EA and SEA proponents, will not only achieve the benefit of a strengthened public empowerment, but also aid in the transition to more sustainable decision-making.

Table 2: Basic Features of a Meaningful Participation in EA (Stewart and Sinclair, 2007)

Element	Sub-Category
Integrity and Accountability	Transparency
	Sincerity of lead agency
	Process intentions are clear
Influence	
Fair notice and time	
Inclusiveness and adequate representation	Engaging interest
Fair and open dialogue	Positive communication
	Capacity building
	Interactive formats
Multiple and appropriate methods	Multiple techniques
	Staged process
	Appropriate techniques
	Consult on design
Adequate and accessible information	
Informed participation	

Numerous benefits of public participation have been identified in the EA and SEA literature, with the topmost benefit being the assurance that the public is given an opportunity to express their concerns and views in decision-making processes and that those will be listened to and acted on

(Arnsetin, 1969 O'Faircheallaigh, 2010; Gauthier et al, 2011; Sinclair et al, 2008; Sims, 2012). According to World Bank (2007), the poor are the most vulnerable part of any society, and with the least power to influence any national strategic-level decisions. They are vulnerable in terms of their high dependence on environmental resources for survival, and as well, are often the population mostly affected by environmental degradation (OECD, 2012). Thus, meaningful participation does not only empower the poor and the local communities, but also ensures a democratic representation where the poor can voice out the actions that affect them, and enable them to establish the changes that may occur in the environment and their communities due to a policy or development (Sinclair and Diduck, 2001; O'Faircheallaigh, 2010; Fitzpatrick and Sinclair, 2003).

Other benefits of participation have also been established to include:

- Increases legitimacy of the evaluation of alternatives (Sinclair and Diduck, 2009; Stewart and Sinclair, 2007);
- Potential for conflict resolution at the early stages of an SEA, while ensuring time and cost effectiveness (Diduck and Mitchell, 2003; Fitzpatrick and Sinclair, 2003);
- Opportunity to gain local and traditional knowledge from various sources, with broad range of solutions (Fitzpatrick and Sinclair, 2003, Petts, 1999);
- Increased transparency of decisions and subsequent acceptability of such program or plan by the public (Therivel, 2010; Sinclair et al, 2008, Diduck et al., 2012); and,
- Ensures sustainability-based individual and social learning outcomes that can effectively meet the needs of the public (Spaling et al., 2011; Sinclair and Diduck, 2001; Diduck and Mitchell, 2003; Fitzpatrick and Sinclair, 2003).

While SEA can facilitate collaborative public involvement in decision-making, there are many drawbacks associated with the practice that have made SEA participation challenging in its implementation and design (Fitzpatrick and Sinclair, 2003, Diduck and Mitchell, 2003). A notable challenge revealed in the SEA literature is the lack of participation at strategic levels of planning which has often led to public distrust about their opinions influencing decisions (Sinclair and Diduck, 2001). However, Heiland (2005) argues that while SEA disregards this misconception by allowing public participation at the early stages, PPP concepts are often too theoretical and include sensitive information, making the design of appropriate participatory processes challenging. This has led to what some call the 'paradox of participation' where the public is often more involved in project-level EIA where their opinions hardly count, as opposed to SEA where they have a greater chance of influencing decisions more normatively but with little opportunity for participation and in some cases the will to participate, given that specific projects are often not being discussed (Heiland, 2005).

Nonetheless, it has been emphasized that public issues that go beyond the project tier of EA decisions can be addressed through distinct SEA approaches considering policy and legislative processes (Doelle and Sinclair, 2006). This can provide a platform for all public concerns that goes beyond proposed development to be broadly addressed in an open manner. This way, participation can be meaningfully incorporated in strategic planning while building trust in the public (Rauchmeyer and Risse, 2001; Doelle and Sinclair, 2006). This is particularly important because weak laws and policies pertinent to public participation can lead to subsequent weakness of participatory approaches (Sinclair and Diduck, 2001). Lack of political will is another major drawback for an effective public participation in SEA. Apart from the concern that confidence and control might be lost during public consultation, responding to public comments and opinion for

such a broad decision-making PPP process is often too complex (Therivel, 2010; Heiland, 2005). Thus, proponents are often worried that they might overspend their budget which may result in delay of the EA process, or government is put in the position of sharing power they do not want to (Heiland, 2005; Spaling et al., 2011).

Other challenges that might also lead to weak participation in SEA process have been summarized as: lack of participants' access to information and communication; insufficient training, education and awareness; and the cumbersome workload associated with the overall public process (Sinclair and Diduck, 2001). To enable the public to gain a broad awareness of the EA process, the public should be adequately notified, financially equipped, and all EA reports should be written in ways that can be understood (Mwenda et al., 2012; Spaling et al., 2011). Moreover, with illiteracy and voiceless situations of marginalized sections of the society, leading edge ways must be found to meaningfully involve such publics in SEA and EA in developing countries like Kenya. Spaling et al., (2011) suggested that sufficient notice, wider representation of the women and youth, participants' funding programs, fairness in cost allocation, access to public meetings and conflict resolutions, and sharing of findings and follow-up, are the best practices that can propel meaningful participation at the community level in EA and SEA.

In general, participation in SEA as opposed to EA, is ongoing and iterative (Therivel, 2010; João, 2005). This allows the public to develop more understanding of the entire SEA process, choose best options through consideration of broad alternatives, identify positive and negative consequences of PPPs, and obtain a feedback that can inform subsequent planning stages (João, 2005; Partidario, 1996; Diduck et al., 2012). A follow-up and sharing of findings is particularly important to all participants because when they gain access to, and understand how their inputs

were utilized, this will encourage them to participate in future decisions that might affect them (Spaling et al., 2011)

2.2.2 Public Participation in Kenyan EA and SEA

Despite the advantages of public participation in EA, and since the enactment of EMCA in 1999, the importance of public participation and consultation in environmental planning in Kenya is limited to only a few studies conducted to investigate the stance that people took during participatory processes in EA and SEA (e.g. Onyango and Schmidt, 2007; Okello et al., 2009; Onyango and Namango, 2005, Mutui et al., 2013, Walker et al., 2014; Walker et al., 2016). For instance, while Onyango and Schmidt (2007) analyzed public participation and the SEA framework in Kenya, Okello et al., (2009) pointed out the possible barriers to an effective public participation during EA, Mutui et al., (2013) presented an update on the current SEA practice in Kenya, and Walker et al., (2014; 2016) examined the practice and adaptation of public participation in Kenyan SEA.

The national SEA guidelines make provision for participation in EA by describing all stakeholders as those who show interest in, or who may be affected during the implementation of PPP, and may include the "lead agencies, the government, NGOs and local communities" (NEMA, 2012). An interesting requirement of the national SEA Guidelines is the education component whereby proponents and consultants are assigned the responsibility to provide SEA education to the participants of host PPP communities, and that participation should be incorporated at early stages of the SEA and plan process, from the scoping stage to the final review of draft report Despite these provisions, EA practice in Kenya has been generally viewed as weak, especially during the scoping, report review and follow-up stages (Okello et al., 2009; Onyango and Schmidt, 2007). As well, illiteracy and language barriers (Spaling et al., 2011), inconsistency in the

enforcement of regulations (Mwenda et al., 2012); short notice, late timing, inadequate access to information (Walker et al., 2014), and lack of inclusion of the marginalized public (Walker et al., 2016) are some of the barriers that have crippled a successful citizen participation in the Kenyan EA and SEA.

While NEMA in its strategic Vision 2030 plan recognizes the importance of public education component, incorporation of local knowledge, and participation in achieving a sustainable environmental planning, improvements in the participation process are still required in practice. For instance, Okello et al., (2009) and Spaling et al., (2011) maintained that there need to be provision of information to the local communities in easily accessible ways such as through local transistor radios, communication through local languages, and provision of adequate funds as the best methods for meaningfully engaging the citizens in Kenyan EA and SEA. In addition, while Walker et al., (2014) discovered that lack of timely notice of SEA meanings, insufficient compensation of participants' time and poor feedback limited meaningful engagement of participants, Walker et al., (2016) recently argued that consistency in the use of SEA triggers, early inclusion of the public in objectives setting, and inclusion of the most affected public will improve active participation at the earlier SEA stage as well as boost the achievability of sustainable development goals of SEA processes.

2.2.3 Transformative Learning Theory

Transformative learning (TL) theory is a broad attempt at explaining adult learning. It was developed by Mezirow (1998, 2000) as a process through which adults learn to think critically by questioning underlying assumptions and habits of expectations, and validating meanings by assessing reasons. TL theory originally stems from national research on women who returned to college in the United States in the 1970s (Mezirow, 1978). In this research, Mezirow (1978)

explains their transformation in a ten-step process that begins with a "disorienting dilemma" that triggers self-examination of one's underlying assumptions, followed by the discussion of these thoughts with others, which leads to exploration of new roles, relationships, and actions, a trying on of new roles, and finally "a reintegration into one's life based on conditions dictated by one's new perspective" (Mezirow, 2000, p. 22).

He describes transformative learning as meaning-making of experiences through the reinterpretation of old experiences. When reinterpreted experiences are used to make or guide decisions, then meaning-making becomes learning (Mezirow, 2000). This means that by critically reflecting on one's assumptions, including habits of mind and biases that form the old perspectives, our perspectives are transformed to a "new set of expectations" or meaning perspective (Mezirow, 1991: 11). Further, stemming from Habermas' (1981) identification of types of learning and problem solving, Mezirow (1998) describes transformative learning as a process through which individuals explore their instrumental and communicative ability to create more functional frames of reference. Instrumental learning, one domain of learning he identified, is a task-oriented problem-solving process that enables individuals to control or manipulate the environment to improve performance (Mezirow, 1998, 2000). Communicative learning, the second domain of learning identified, involves trying to understand what others mean when they communicate with you, availing the learner an opportunity to negotiate meanings, critique assertions, intentions and values, rather than simply accepting other people's views (Mezirow, 1998, 2000, 2012). A combination of instrumental and communicative learning are understood to generate individual transformative learning, which is a learning process that changes an individual's frame of reference, or worldview, with a potential to foster sustainability (Diduck et al., 2012; Kerton & Sinclair 2010).

To freely and fully participate in rational discourse, Mezirow (2000) highlighted the ideal conditions that should be met to encourage adult transformative learning. Under these conditions, critical self-reflection can be emancipatory, especially when the learner is free from oppressive interaction with people (Mezirow, 1998). To encounter and validate one's judgement through discourse, there must be:

1. Accurate and complete information,
2. Freedom from coercion,
3. Openness to alternative perspectives,
4. Ability to reflect critically upon presuppositions,
5. Equal opportunity to participate and
6. Ability to assess arguments in a systematic manner and accept a rational consensus as valid

(Mezirow, 1998:13). These conditions of learning have been found to provide a good platform for research and design of participatory processes in resource and environmental management (e.g. Sinclair and Diduck, 2001, Sims, 2012; Sinclair et al., 2008).

2.2.4 Public Participation and Learning through EA

Some scholars have shown the potential of meaningful public participation that reflects or incorporates learning to promote governance and decision making in relation to resources and the environment that is more sustainable (e.g., Webler et al., 1995; Fitpatrick and Sinclair, 2003; Sinclair et al., 2008; Sims, 2012; Walker et al., 2014). For instance, public participation was used to determine best practices required for positive learning outcomes from community based EA (Spaling et al., 2011); for community-forest conservation (Sinclair et al., 2011); SEA of water-shed management programs (Sims, 2012); learning through public hearings (Fitzpatrick and Sinclair, 2003) as well as learning through SEAs (Walker et al., 2014). In a study of the roles of

participants in the conservation of a community-forest in Kenya, Sinclair et al., (2011) documented a change in participants' old perspectives about conservation towards a more environmentally friendly behavior. Through rational discourse, community-participants "questioned their attitudes, and the need for a positive change in conditions in which they lived" (p. 43). For example, a participant critically questioned the "negative views" he had about wildlife conservation, which consequently transformed his behavior, acknowledging that conservation of biodiversity is a commendable goal especially for environmental sustainability (Sinclair et. al., 2011, p.43).

Similarly, in a study of participants' learning outcomes from a community-based strategic environmental assessment (CBSEA) in two Costa Rican watershed programs, Sims (2012) documented various processes that facilitated participants' engagement and learning process. For example, rational discourse facilitated trust building among participants, which was evident when participants "critiqued ideas and sharing of knowledge and thoughts with others" (Sims, 2012:8; Taylor 2000). Learning and action was also triggered by participation in the EA process through the planning and implementation of various decision-making workshop activities, giving the participants opportunity to "reflect on community values and goals" (Sims, 2012: 9). In addition to gaining new values and skills during assessment programs, participation also promoted communal awareness of environmental assessments, initiation of alternative sustainability projects, and learning on how to collaborate more effectively (Sims, 2012).

From these example, it is evident that through meaningfully involving members of the community in environmental decision-making processes, learning outcomes that are transformative in nature may result. Such outcomes can lead to social action on the environment and sustainability (Sinclair et al, 2008; Gauthier et al., 2010, Sims, 2012).

2.3 EA of Solid Waste Management Options in Kenya

2.3.1 Overview of Solid Waste Management in Kenya

According to the United Nations (2013), the world is rapidly urbanizing with residents consuming more and generating more waste. In developing African countries, the population growth rate as well as living standards are rapidly increasing and have been predicted to double in the present decade (UNEP, 2013). Kenya is no exception to this as the rate of urbanization has not only resulted in large concentration of people in cities, but also an increase in solid waste management problems (Henry et al., 2006: Rotich et al., 2006). Solid waste, can be defined as any unwanted material that is intended or required to be discarded by the producer (OECD, 2012). It includes household wastes, as well as waste from commercial industries, office buildings, institutions, yards and gardens, street sweepings, contents of litter containers, and market cleaning. Waste management on the other hand, is the supervised process of waste handling from collection and transportation to waste recovery, disposal and subsequent maintenance of disposal sites (OECD, 2012; UNEP, 2012).

In Kenya, the challenge of SWM is increasing (Gakungu, 2011), with inefficient collection and less environmental-friendly disposal systems in place to collect at least 40 to 50% of all solid waste generated in urban areas (about 2,240 tones/day) (Mwanzia et al., 2013). Furthermore, Henry et al., (2009) argued that about 80% of waste collection tucks are currently out of order, and if the issue of SWM- that is waste collection at transfer stations and dumping at landfill sites- in Kenya is not promptly revisited, virtually all the cities in the country will be submerged in garbage. Table 3 highlights, for example, the situation in the country's capital city of Nairobi. It reveals that the solid waste situation has become very problematic due to the inadequate collection and

handling of waste and the unsupervised dumping of wastes which has resulted in pollution and disease outbreak from the community dumpsites (Njoroge et al., 2014; Tan, 2012).

Table 3: Status of SWM in Nairobi, Kenya (Source: UNEP, 2013)

Solid Waste Generation Rate	**Solid Waste Management Process**	**Collection Efficiency**	**Actors**
2,240 tones/day	➢ Waste generation from source ➢ Waste collection at transfer stations ➢ Dumping at landfill sites	50 %	➢ City Authorities ➢ CBO's ➢ Private Firms ➢ Self-Disposal

Although, the divisional authorities are assigned the responsibility of supervising and monitoring waste contractors and ensuring proper waste disposal practices, especially transportation of wastes from collection stations to the dumpsites, inadequate public access and poor enforcement of regulations have downplayed successful SWM in most parts of the city (Henry et al., 2006; Njoroge et al., 2014). Nonetheless, the United Nations Environment Program established ISWM that commenced in the city in 2009 (UNEP, 2010). The program was designed to ensure "maximized waste reduction and resource recovery" through a community-based participatory approach, while protecting public health as well as maintaining environmental resources, diversity and productivity (UNEP, 2010: 2)

However, in some other parts of Nairobi, as well as other cities in the country such as Mombasa, Nakuru, and Kisumu, there is the continued emergence of informal waste management activities through community-based organizations (CBOs- comprising of women and youth). The CBOs, alongside charitable organizations, welfare societies, village committees, self-help groups,

and residential neighborhood associations help to provide environmental-friendly waste services while generating income and creating jobs for residents (Peters, 1998; Njoroge et al., 2014; Tan, 2012). Some of the services rendered by these groups include waste compositing, collection and transportation of solid waste, storage, trading and recycling of waste component such as plastics, glass, and conversion of cow dungs to biogas. The acceptance of composting by, and the work of the waste CBOs on waste management has not only created employment for over 200,000 people across the country, but is also likely to raise living standards within the localities (Peters, 1998; Njoroge et al., 2014; Tan, 2012).

Owing to the global increase in environmental concerns, and the emphasis on material and energy recovery, and increased experiences in this field, there is a growing paradigm shift towards a more sustainable solid waste management and planning (UNEP, 2013). The goal is to reduce waste and then design a sustainable and cost-effective SWM system that will incorporate different management approaches. Such approaches would also consider solid waste decision-making techniques that will contemplate the social, political, economic and environmental implications of any PPP developed for waste management. As well, the approach accounts for the rate of waste generated from point source, waste composition, collection, treatment, disposal and any likely environmental impacts of each process (UNEP, 2005; 2013).

This waste management approach is termed Integrated Solid Waste Management (ISWM). ISWM was established in the United Nations SWM Guidelines (2013), to create a platform where waste materials are adequately treated and managed in the most environmentally acceptable manner where valuable resources and/or energy are recovered. ISWM also aims to corroborate and coordinate the efforts of all waste actors to ensure that waste is properly handled based on the '4R' hierarchy-reduce, recovery, re-use, and recycle (also known as waste management hierarchy).

Hoornweg and Bhada-Tata (2012) further pointed out that the ISWM approach to waste reduction and recovery is the most sustainable means to complement waste disposal through landfilling and incineration waste disposal techniques, since it is difficult to achieve a 100 percent waste management. As a fundamental part of the EU waste directive (2008/98/EG), the waste hierarchy was formed by the EU and adopted by the EU countries, with the main aim of curtailing the potential impacts of waste on human beings, animals and the environment.

There are five steps in the waste hierarchy (Figure 1). The first step ensures that the volume of waste generated in the beginning is reduced. This step encourages the use of all possible means to reduce waste. In the second stage, the reuse of unwanted items is encouraged. For instance, when items such as clothes, shoes, furniture, or electrical equipment are reused, the amount of waste that must be managed is reduced. Thirdly, waste that cannot be reused in its current form should be segregated where possible for recycling. There are mature recycling systems now throughout the world, including Africa, for a variety of items like metal and paper (Conyers et al., 2002, Okot-okomu, 2012).

Materials that cannot be recycled have the potential for recovery, for example the energy within the material may be recovered through incineration (UNEP, 2005). Some also include composting of food and other biodegradable wastes under the recovery banner. Lastly, any remaining material can be eventually disposed in the landfill. Many environmental benefits have been associated with the ISWM method of waste management which including, but not limited to, pollution and underground leachate prevention, reduction in greenhouse gas emission, energy preservation, and natural resources conservation (UNEP, 2013; Njoroge et al., 2014).

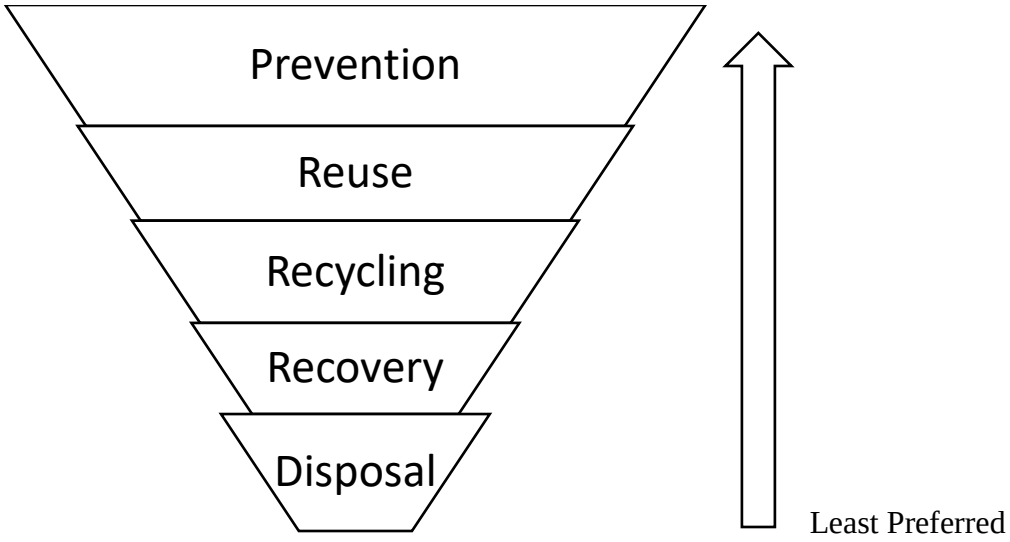

Figure 1: Waste Management Hierarchy (Source: UNEP, 2013)

Although quite new, Kenya's national waste policy is currently shifting focus to the adoption of the ISWM approach to SWM by placing emphasis on choosing SWM alternatives that first encourage waste prevention and minimization followed by re-use, recycling, energy recovery as environmentally sustainable waste disposal processes (NEMA, 2014; UNEP, 2010). The ISWM approach have been considered as part of some completed SEA cases for city development (e.g. Tatu City Structure Plan, Red Coral Development Plan, Nairobi Urban Master Plan) with the main objective of driving waste management up the hierarchy and reducing reliance on disposal. In addition, some of the completed SEA cases also advocated enhanced public participation in waste management planning, and the identification of waste alternatives that adhere strictly to the 4R principle of waste reduction, reuse, recovery and recycling (NEMA, 2014; UNEP, 2012).

2.4 Summary

SEA has been recognized as an important governance tool that can effectively integrate environmental considerations into higher-level decisions to help encourage the sustainability in developing countries like Kenya (Therivel, 2010). Public participation is an important component

of SEA because it ensures that voice is given to the marginalized sections of society, increases transparency of decisions, and ensures sustainability-based individual and social learning outcomes occur. Kenya has undertaken quite a few SEAs but the practice is still evolving, and the opportunity exist to further assess its implementation. The necessity of advanced solid waste management in Kenya is also clear in part not just to the quantities being generated and lack of adequate management, making such considerations ripe for analysis in the SEA context.

3 Methods

3.1 Research design and worldview

As established in Chapter 2, SEA has been recognized as an important tool in the governance toolkit for effectively integrating social, economic and environmental considerations into higher-level national decision-making processes, especially when public participation is a key component (Therivel, 2010). Views regarding the importance of public participation in SEA and in environmental decision making more generally, are directly linked to my worldview which aligns with the participatory/advocacy view (Creswell, 2009). I strongly believe in the value of involving people in decisions that affect them, and that this and advocating for change are essential to sustainability planning. More so, the participatory approach ensures that the communities affected by, for example, waste problems are involved in planning and in higher-level discussions that can help in solving complex sustainability issues (Heiland, 2005).

Owing to the evolving nature of SEA in environmental management (Diduck et al., 2012), and those who operate within a participatory/advocacy worldview believe that research will be used to help to change the lives of the participants (Creswell, 2007), a qualitative design aligned with my worldview because it allowed me to involve people more directly in my research and draw conclusions based on people's experiences and beliefs (Creswell, 2014). Qualitative research is often employed "when we want to empower individuals to share their stories, hear their voices, and minimize power relations that often exist between a researcher and the participants in a study" (Creswell 2007, p. 14). A qualitative research design was, therefore, suitable for my research because I explored participants' experience to gain an in-depth description of circumstances and eventualities that define SEA and waste issues in Kenya (Creswell, 2014). Moreover, complex decision-making processes like SEA, require information gathering from individuals through

communication, and subsequent analysis of documentation using interactive data collection techniques (Creswell, 2007). Given this, and to effectively fulfill my research objectives within the available time-frame, a case study strategy of inquiry was utilized in my research (Stake, 2005).

3.2 Case Study Strategy of Inquiry

Case study research is defined as "a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time through a detailed, in-depth data collection process involving multiple sources of information … and reports a case description and case-based themes" (Creswell, 2007, p. 245). Yin (2003, p.13) and Stake (2005) provide a commonly cited definition of a case study as an "empirical approach" to a research problem that investigates and answers the 'how' and 'why' questions of a phenomenon within its natural context such that the issue being explored is examined through one or more cases within a bounded system, using a variety of data sources. In other words, I chose a case study strategy of inquiry since I was to consider how and why questions in the context in which people are living, and in relation to how SEA is being undertaken (Merriam, 2008; Yin, 2003).

To select cases, I initially looked at completed SEA cases on file at NEMA and assessed them against best practice for SEA in Kenya. I then selected two bounded cases that I felt were most likely to reveal the issues highlighted in Figure 3 (below) in detail. A careful selection of cases and participants, as suggested by Creswell (2009), allowed me to meet my set objectives while strengthening my study approach. The initial stage of my study included examining 40 completed SEA reports from the National Environment Management Authority (NEMA) to help establish key components of SEA process in the country (which I then used in my more detailed consideration of the cases that involved SWM issues), determined the locations for each case, and

helped identify participants involved in the completed SEAs with attention given to SWM alternatives chosen in the cases.

Of the 40 completed SEAs, eight were related to urban and city planning (Table 4) (NEMA, 2014). My choice of SEAs relating to urban or city plan is not only owing to the direct relationship of such plans to the implementation of effective solid waste management, but also because urbanization is one of the key factors that contribute to waste generation in urban areas (Rotich et al. 2006). Five out of the eight urban related cases were then selected for detailed assessments using the following criteria:

1. The SEAs should be completed (or close to being completed), accessible for review and recent;
2. The SEAs should comply with national guidelines, and SWM options should align with best practice guidelines;
3. Public participation must be evident in the completed cases especially at the community level, with attention given to SWM; and,
4. The communities of participants and stakeholders that were involved in the completed SEAs must be willing to participate in the study

Table 4: List of the 8 urban sector SEAs of the 40 completed SEAs in Kenya (Source: NEMA, 2015; Mutui et al. 2013).

S/N	Name of SEA Report	Year Initiated	Sector/Tier	Availability for review
1.	SEA for the Proposed Kinanie Leather Industrial Park	2015	Urban/Industry, Plan	Available
2.	SEA for the Proposed Northlands Master Plan, Kiambu County	2015	Urban, Plan	Available

3.	SEA for the Proposed Red Coral Development in Limuru, Kiambu County	2014	Urban, Plan	Available
4.	Master Plan for Development of Mombasa Special Economic Zone in the Republic of Kenya (MSEZ)	2014	Urban, Plan	Available
5.	SEA for the Integrated Urban Development Master Plan for the city of Nairobi	2013	Urban, Plan	Available
6.	SEA for the proposed Tatu City Structure Plan	2010	Urban, Plan	Available
7.	SEA for the Proposed expansion of development for Taveta Township	2010	Urban, Plan	Available
8.	SEA for the Proposed Master Plan for New Machakos City	2010	Urban, Plan	Available

Of the 8 completed urban SEA cases, and from the information I gathered in the field (See Chapter 4), 5 urban SEAs met the above criteria. Two of the cases were then selected for detailed analysis- the Nairobi Integrated Urban Development Master Plan (NUPLAN), and the Kinanie Leather Industrial Park (KLIP). The NIUPLAN SEA was selected because it is an all-inclusive study and, in comparision to the 7 other cases, best harmonized with the National SEA Guidelines, and involved a wider variety of participants. Taking place in Nairobi, the case also afforded easy access to participants that were involved in the SEA. KLIP SEA on the other hand was selected since it partially conforms with NEMA's Guidelines. As well, its nearness to Nairobi provided easy access to KLIP participants, and its noncomprehensive stakeholder engagement process availed me an opportunity to contrast findings with NIUPLAN SEA. Figure 2 establishes the procedural steps I used as a guide that helped me to maintain thoroughness.

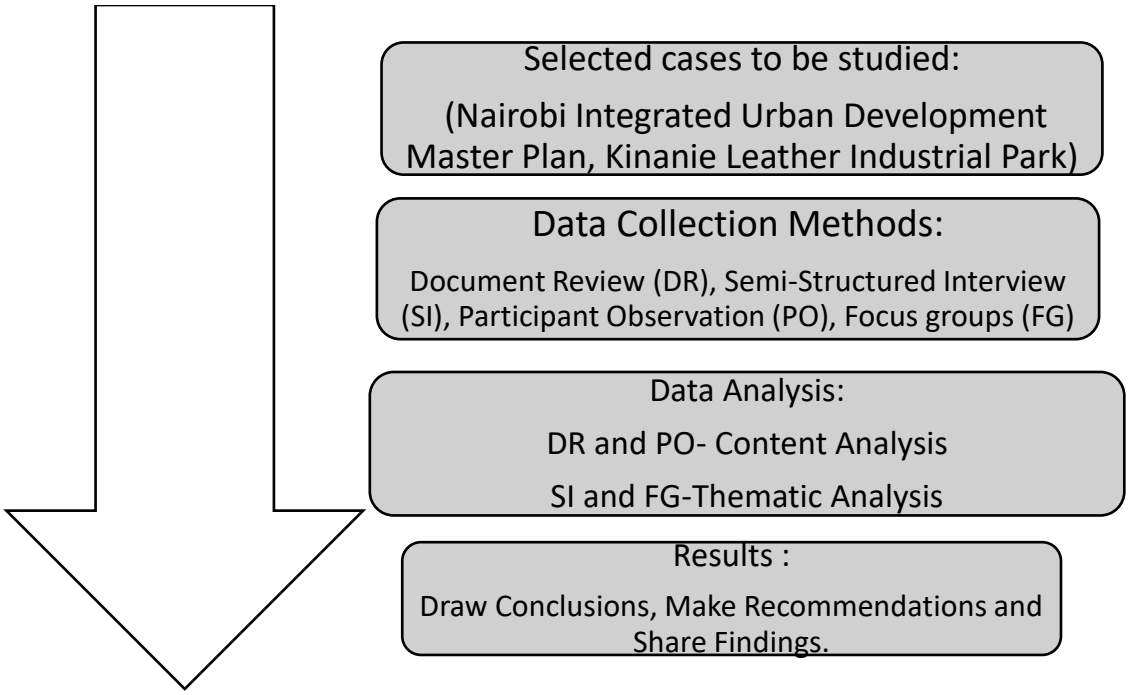

Figure 2: Schematic Representation of the Research Design

3.3 Data Collection Methods

Case study research often employs the use of data collection methods such as participant observations, interviews, archival records, physical artifacts, focus groups, and review of documents and reports (Creswell, 2009). The data collection methods used in my research included document review, semi-structured interviews, focus groups and participant observation because they not only aligned with my research approach, but they also produced multiple data to be analyzed to help ensure the validity and accuracy of data collected (Creswell, 2014). Table 5 below highlights the research objectives, data collection methods and procedures, evaluation guide, and techniques of data analysis.

Table 5: Methods, Guidelines, and Publications used for fulfilling my Research Objectives

Themes to be evaluated from objectives	Data collection Method (s) to meet objectives	Guiding source of evaluation	Analytical tools
1. SEA practice	➢ Document reviews of reports and minutes of meetings ➢ Literature review ➢ Semi-structured interviews with SEA experts, stakeholders and government officials	➢ SEA literature, Kenyan SEA guidelines ➢ Kenyan SWM Guidelines	➢ Thematic analysis of documents via coding, comparing and contrasting of SEA reports
2. Public participation process, importance, and conditions for learning	➢ Document reviews of reports ➢ Semi-structured interviews with government officials, stakeholders, NGOs, and local community groups ➢ Focus groups meetings	➢ Previous studies on EA and SEA in Kenya. ➢ Ideal conditions for learning (Mezirow, 1998; Sinclair and Diduck's, 2001)	➢ Coding of emergent categories via Content analysis
3. Participants' individual learning outcomes about SEA and SWM	➢ Semi-structured interviews with NGOs, CBOs, communities of participants involved, and women and youth. ➢ Participant observation ➢ Focus groups meetings	➢ Transformative learning theory (Mezirow, 1998)	➢ Comparison with Transformative learning outcomes
4a. Amendments to SEA process and best practice SWM	➢ Document reviews of SEA and SWM reports ➢ Semi-structured interviews with SEA experts, government officials, NGOs, and community members	➢ Records of consultation process in each case	➢ Analyzing and comparison of emergent categories and themes with successful cases in the literature

3.3.1 Document Review

According to Bowen (2009), document review is the logical process of evaluating, analyzing and decoding meaning from printed and electronic documents to draw information, gain

first-hand knowledge, and develop a deeper understanding of the documents to answer research questions. Documents not only helped me by providing facts on the context and background of the cases, but also helped to provide an alternative source of data that is supplementary to other data sources, as suggested by the literature (e.g., Bowen, 2009). The document review process started with an initial review of about 5 urban sector SEAs out of the 40 completed SEAs available through NEMA's Enforcement and Compliance Department, as well as through NEMA' website.

Document reviews helped address objective 1 of the study by allowing me to assess completed SEA reports, notices of SEA meetings and reports of minutes and to determine if and how SEA standard procedures were followed, and consequently select participants recruited for the research. The major evaluation criteria and reporting style for SEA in Kenya that I used was the National SEA Guidelines compiled by NEMA, the SEA Analysis and Performance Criteria (IAIA, 2002) and supplemented with the SEA literature described in Chapter 2 of the study (e.g. Therivel, 2010; OECD, 2006; Fischer and Gazola, 2010). The reviewed SEAs also fulfilled part of objective 2 of the study by helping to identify key participants that were recruited in the study through attendance register of the minutes of meetings , stages of involvement of participants in the SEA, if and how inputs were addressed, SWM discussions and pertinent locations for SWM to be studied during the research, and most importantly, the selection of the detailed cases (i.e. Nairobi Integrated Urban Master Plan, and Kinanie Leather Industrial Park).

Although document reviews have various advantages such as cost-effectiveness, alternative source of data, and wide coverage, Bowen (2009) also points out that such reviews can be disadvantageous as data might be insufficient with low retrievability or data might be sometimes selected biasedly. To overcome these limitations, I reviewed the SEA and SWM literature to corroborate my findings with relevant works pertinent to my research objectives, and

identified actual participants, proponents and agencies that were involved in the detailed SEA study. Moreover, I used data from the documents as a roadmap to the next stage of the research, and triangulated data from other data collection methods.

3.3.2 Semi-structured Interviews

Since my study aimed to investigate public participation process and learning outcomes, as well as participants' perception of chosen SWM alternatives, semi-structured interviews were the main data collection method used and enabled me gather data associated with all 4 research objectives (Hay, 2008). Semi-structured interviews are directed by open-ended questions that allowed participants to express their in-depth opinions and views in their own words, while also availed the interviewer the opportunity to subsequently follow-up on data generated (Merriam, 1998; Hay, 2008). In my research, I recruited participants based on their involvement in meetings of the completed SEA cases. Participants included EA practitioners, government officials, NGOs and community groups and individuals that were involved in the two completed SEA cases selected. These categories of participants were recruited to help consider the SEA process used and determine opportunities for public participation.

The initial stage involved email communication and networking with the first group of participants mainly SEA experts and participating government officials in Kenya, as well as environmental consultants who were involved in the SEA reports reviewed. This allowed me to establish a form of familiarization with informants to gain access to interviewees in the field and to reduce any form of discomfort that occurred during the interview process (Hay, 2008). The networking was made possible through my advisor, Dr. Sinclair, as well as my committee members, Dr. Spaling and Miss. Walker, since they have vast knowledge about SEA in Kenya, and are well connected to key SEA officials in the country. The interviews with EA experts and

government officials were conducted to develop a deeper understanding of the SEA process, public participation, and the extent to which SWM was a consideration in the completed SEAs. A total of 10 SEA professionals and government representatives identified in the SEA documents were interviewed, with each interview lasting at least 60 minutes (Table 6).

At the later stage, I recruited the second group of participants associated with the two cases including local community members and stakeholders identified in the SEA documents, with additional community groups and individuals. I interviewed 22 participants from the NIUPLAN SEA case, made up of 11 individuals and 11 CBO groups represented in each public consultation gathering. Interviews for the NIUPLAN SEA were conducted in Nairobi city being the location of most of the community members. In addition, interviews were conducted in the preferred location of the community participants, while interviews with CBOs and local NGOs were conducted at their meeting venues especially at restaurants and community halls. On a few occasions, I conducted interviews at participants' residence since post-interview discussions often led to us to visit communities affected by waste activities, especially communities located close to dumpsites.

In the case of KLIP SEA, I interviewed a total of 9 participants including 8 community residents and 1 CBO group (Table 6). The interview process was meant to examine how community participants were selected to be part of the SEA process by the proponents, what was deliberated upon by them during the SEA, how participants' input was utilized, and outcomes of the participation process for the SEA, and what was learned by participants as part of their involvement. The semi-structured interview guide used is attached on Appendix 1. The interview questions for the first group of participants were guided by the SEA, public participation and SWM literature, and was designed to fit within the Kenyan context and to reflect the details in the selected cases (Therivel, 2010; Spaling et al., 2011; Okello et al., 2009; UNEP; 2013). While Mezirow's

ideal conditions of learning guided interview questions for the community participants (Sinclair and Diduck, 2001), instrumental, communicative and transformative learning are the key indicators of learning that formed major part of the community interview guide (Figure 3). I applied the 'funneling' method in developing these interview schedules, beginning with introductory questions related to interviewee's personal matters to specific issues pertinent to the study. According to Hay (2005, p. 85), funneling allows the interviewees to be at ease before discussing sensitive issues that might appear uncomfortable to them.

I used field visits and interviews to better understand of leading edge SWM techniques being used or considered in Kenya. While I was fairly certain of the literature in relation to SEA in Kenya, I was not certain that the literature captured all the new techniques being used for SWM. For example, I found out about community-based waste enterprises involving women and youth, and I also found out more about other waste management techniques such as composting and local waste recycling activities as described in Chapter 5 of the thesis.

Table 6: A Compilation of Participants Interviewed in the Selected Case Studies

SEA Experts and Government Officials		**Community Participants**		**CBOs and NGOs**	
NEMA Representatives	3	Women	3	Self-help Groups	7
SEA Proponents and Consultants	5	Men	10	Waste-based CBOs	4
Government Agencies	2	Youth	2	Local NGOs	1

To ensure participants' confidentiality, I followed the ethics procedure implemented at the University of Manitoba and issued a letter of consent to inform participants about my research intentions, and assured them that their comments would be kept confidential unless otherwise instructed by them. To document appropriate body language and other useful gestures, I kept notes in addition to using an audio recorder. I also used a translator while in some communities to ensure

the comments of participants who do not speak English were clearly captured. Following the interview process, a summary of the interview transcript, as well as the transcribed interview, was discussed with all participants for any addition or modification of data, and to help with the validation of data collected from other data sources.

3.3.3 Participant observation

According to Narayanasamy (2009), participant observation is the study of an occurrence in its natural setting with the intention of gathering data for a particular study. In other words, participant observation involves close association with communities of participants in a study area to observe everyday activities and be more at ease while observing and recording information about their lives (Bernard, 2006). When a tangible amount of time is spent with participants, the researcher can better understand the community norms and builds trust in relationships that could create a platform where participants can comfortably share their views. More so, increased rapport with the participants not only motivates them to go on with their usual day-to-day activities, but also reduce the possibility of reactivity that may occur during an interview (Bernard, 2006).

In my research, I acted as a participant observer which served as a valuable data collection method that helped me to develop an understanding of participants' perception and beliefs (Bernard, 2006). The initial stage involved attending SEA consultation meetings and validation workshops. On 4 occasions, I participated and observed different SEA meetings and updates. First, at the NEMA head office. I was invited to participate and learn how SEA consultants meet with NEMA's Enforcement and Compliance staff to review any updates, and evaluate SEA scoping reports that consultants bring forward. Secondly, I participated in the SEA pre-training session provided to NEMA staff who were to travel for the full training session that was held in Sweden. There I took notes of the purpose and objectives of the training including SEA Strength,

Weaknesses, Opportunities and Threats (SWOT) analysis, as well as presentations from participants in regard to their professional roles as EA experts. Thirdly, I was invited to participate as a researcher during the public engagement sessions for the Yala Swamp SEA, a land use SEA that was proposed to promote Ecotourism and Habitat restoration in Yala Swamp, Busia. Lastly, I attended the validation workshop for the KLIP SEA in which I had the opportunity to document the categories of participants invited, as well as opportunities provided for the public to air their concerns. Although some of the SEA public consultation meetings were not based on invitation, I declared my intent as a researcher and had the opportunity to meet with individuals who volunteered to participate in my interview process.

The second type of observation involved spending time in the communities that were involved in the proposed SEA plans in the two study locations. I interacted with community members from informal settlements and slums to observe waste sorting, recycling and disposal patterns. Spending time with these communities and with local NGOs and waste-based CBOs such as the *Dandora Transformation League*, the *Kungagata Women Group*, Little Bees International, Kenya (LBIK) and a host of other groups helped me to ascertain their role in SEA and how they function as an organization which has helped me develop a better understanding of waste issues in Kenya. For instance, the *Korogocho Women Group* revealed that, by participation in SEA, they have developed simple waste conversion techniques such as generation of charcoal from cow dungs by mixing the dungs with ash and water and molding them into shapes that can be used for cooking or heating. Not only does this save the costs of cooking with gas or electricity, it was also recognized as an excellent way of conserving energy. In sum, I interacted with local people from 12 CBOs from the 2 cases I looked at in detail, and I observed other ground SWM activities such as composting and recycling activities. To effectively get the salient points discussed, I took notes

of my observations which I used in the thesis to supplement the data collected through the document reviews and interviews.

3.3.4 Focus Group Discussions

Focus groups involve the discussion of a topic or group of topics by a group of participants typically chaired by the researcher (Cameron, 2008). The idea is to create an environment where the researcher's influence is lessened, and all participants can respond to each other's contributions which in turn often triggers a series of responses that shape gatherings. The chain of responses initiated can allow participants' viewpoint to be aired, enable participants to question each other's underlying worldviews, and establish similarities and differences in meanings of people's opinions (Finch and Lewis, 2003).

I involved 6 participants including new and interviewed participants, in each of the 2 focus group discussions (FGDs) conducted. I ensured that focus of discussion was related to their involvement in the SEA, that is, how they were involved and whether there were opportunities to learn as part of their involvement, as well as other issues regarding their views on SWM alternatives. Although I was permitted to use an audio recorder in each case, I also took down notes into my field note. The FGD meetings were conducted in English as the participants were fluent in both English and *Kiswahili*. Focus group enabled me to triangulate some of the study findings from other data collection methods while also building deeper relationships with my participants.

3.4 Data Analysis

The semi-structured interviews and FGDs were audio-recorded since participants allowed, and I used the Express Scribe software to transcribe the data collected. The data was coded using the NVivo software. For my data analysis, I developed a framework (Figure 3) that included key

indicators of the SEA process, extent of participation in SEA, SWM options established, learning conditions, and types of learning outcomes for social action as it has been used in the literature and as outlined in Chapter 2. The themes identified in Figure 3 draw on existing constructs from past studies of public participation in SEA within the Kenyan context (e.g. Walker et al., 2014; Spaling et al., 2011), developing themes from transformative learning literature (e.g. Mezirow, 2000; Sinclair and Diduck, 2001; Sinclair et al, 2008; Sims, 2012), and extract key themes from SWM literature (e.g. Dennis and Agamuthu, 2013; Okot-Okumu, 2012; Oberlin and Sza´nto´, 2011) as earlier discussed in chapter two.

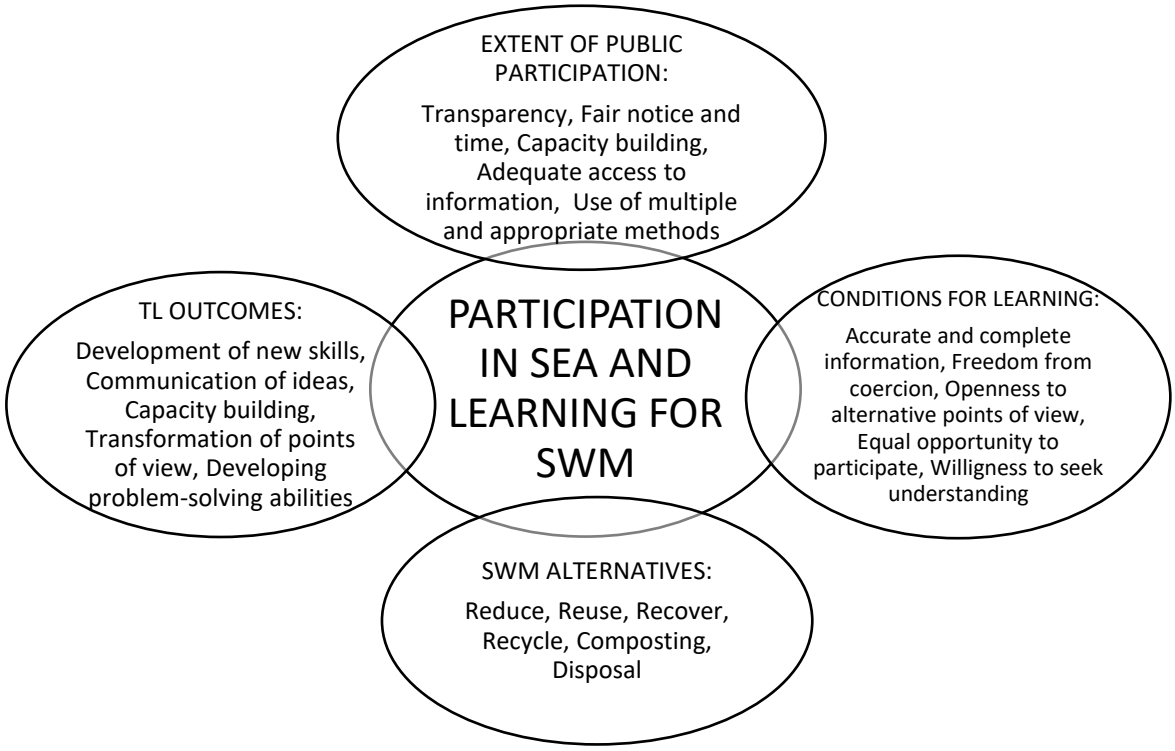

Figure 3: A Framework showing the relationship between the Themes and Indicators to be used for Data Collection and Analysis

Coding along these key themes was done for organization of the data and to be used as initial themes in this research, that will ensure linkage with themes from the theoretical framework that compares and contrasts findings others have made (O'Connor and Gibson, 2003). Other parent

and sub-themes were developed during the data analysis and grounded in the data itself as is revealed in the chapters that follow. NVivo software was used to help understand the connections between all the themes generated for subsequent interpretation.

4 SEA and SWM in Kenya: Comparison with Standard Practice

4.1 Evaluation of the SEA Process

The initial data collection and review of SEA documents made available at the NEMA head office in Nairobi enhanced my understanding of the SEA process, public participation, as well as problems, laws, and existing opportunities pertaining to solid waste management in Kenya. The document review process later enabled for triangulation and verification of the data collected through interviews with SEA experts and consultants, proponents and participating government officials which include NEMA, Kenya Institute for Research and Development (KIRDI), Nairobi City County Government (NCCG) and the Kenyan Leather Corporation (KLC). According to the documents reviewed, about 40 SEAs of PPPs have been completed in Kenya with about 12 in the process of completion, and many more underway. Eight SEAs of urban sector PPPs have been completed and five were reviewed based on the criteria for selection of the cases outlined in Chapter 3. Depending on availability and willingness of participants to be involved in the study, two cases were selected for detailed analysis (Table 7). The two cases selected for detailed analysis are the Integrated Urban Development Master Plan for the city of Nairobi (NIUPLAN) and the Proposed Kinanie Leather Industrial Park (KLIP) in Machakos County. Information on these cases was available through the Nairobi urban masterplan and NEMA websites respectively.

Table 7: Reviewed Urban Sector SEA Documents (NEMA, 2015)

S/N	Name of SEA Report/Acronym	Year Initiated	Sector/Tier	Availability for review
1.	Integrated Urban Development Master Plan for the city of Nairobi (NUPLAN)	2013	Urban, Plan	Available, complete
2.	Master Plan for Development of Mombasa Special Economic Zone in the Republic of Kenya (MSEZ)	2014	Urban/Industry, Plan	Available, Complete

3.	Strategic Environmental Assessment of the Proposed Red Coral Development in Limuru, Kiambu County (RCD)	2014	Urban, Plan	Available, complete
4.	SEA for the proposed Northlands Master plan, Riuru, Kiambu County. (NMP)	2015	Urban, Plan	Available, near completion
5.	SEA for the proposed Kinanie Leather Industrial Park, Athi-River, Machakos County. (KLIP)	2015	Urban/Industry, Plan	Available, near completion

4.1.1 Legal Provision for SEA in Kenya

Although SEA is growing in Kenya, many environmental professionals interviewed have considered the process used to implement it acceptable since it has become embedded in the EMCA [Amended] Act of 2015. Prior to the Amended Act, SEA was not explicitly mentioned but was implied in the EMCA Act of 1999 and described as a process that promotes the "integration of environmental considerations into development policies, plans, programs, and projects" (EMCA 1999). In the Amended Act, section 57A provides that "all Policies, Plans, and Programs for implementation shall be subject to Strategic Environmental Assessment" (EMCA, 2015). Most of the NEMA interviewees not only expressed their satisfaction over the inclusion of SEA in the Amended Act, but also recognized the ability of the new Act to ensure consistency, enforcement, and compliance for all proposed PPPs.

> "Yes, [SEA] is now embedded in the Act. Actually, we are very excited because you know it was mentioned in the regulation and nothing much happened. It became difficult to enforce it because it was not in the main Act. In the main [EMCA] Act is where you have the penalties, but because [SEA] was not [mentioned] there, it became difficult to enforce it. We are happy now that SEA is in [EMCA Amended Act]. It has come out more elaborately so that Kenyans now know the consequences of not doing it" (NEMA Official, interview 1).

In addition, it is now mandatory under the EMCA [Amended] Act for all private and public PPPs to initiate an SEA regardless of time and space (EMCA, 2015). This, in addition to the updated National SEA guideline, is considered by the EA experts and government officials that I spoke with as a key strength that has evolved, and can only be enhanced through continued training of staff and capacity building.

> "… okay, you see before [in the past] SEA for the private sector was voluntary, but now it's a requirement in the Amended Act. So, I think it's a good thing that now the law is very clear. Before it was not very clear on who should do an SEA or not. It was restricted to the public on just policies, but now it's all policies for implementation, which is a good thing…" [Environmental Socio-economist, interview 4]"

> "We have people including the investors coming up with new cities. There are so many of them in Kenya now. So such cities need a plan which is subjected to SEA. Like the Red Coral SEA, it is a city plan and a private investment which has being subjected to SEA… the Red Coral property investors wanted to build cities voluntarily without subjecting the plan to SEA. Right now, the plan was subjected to SEA because SEA is now a legal requirement in the EMCA [Amended] Act" (NEMA Official, interview 3).

While NEMA officials and key SEA experts agree that the EMCA [Amended] Act is successfully implementing Kenya's SEA process, some SEA consultants had different opinions as to how SEA is being used in the country. Rather than being a management tool, one of the SEA consultants thought that SEA is used only to fulfill the legal requirements because the key environmental and socio-economic concerns are often neglected during SEA implementation.

> "I think there is a need for improvement in enforcement and compliance of the recommendations we made, which is in the document [NUPLAN]. There were also policies and regulations that we recommended that should be put in place. As well, SEAs that are completed should be implemented not just conducting an SEA that remains on shelve without implementation…" (SEA Expert, interview 2)

> "I understand there are guidelines, but in my opinion, the guidelines are there to fulfill all righteousness. Most consultants see the guidelines as a formality, either as a compliance procedure or a requirement. SEA is rarely implemented as a management tool in Kenya. If

the aim of SEA is to offset environmental concerns, then there is a need for adjustments in the way it is being conducted in Kenya..." (SEA Expert, interview 5)

Other government stakeholders held different views. They argued that whether or not EMCA was amended to specifically legalize the use of SEA in the country, without properly involving the affected members of the public, the SEA and later EIA processes might be compromised. This is particularly owing to weak public participation process in developmental plans and projects in the country. Nonetheless, other SEA consultants acknowledged the Kenyan SEA as progressing in terms of not only having the capacity to make people's voice be heard, but has also enabled the public to own the project, untypical of project EIA.

4.1.2 Importance of SEA before an EIA

Generally, SEA has not only gained significant recognition in terms of how it is being used in Kenya, but has also increasingly been viewed as a preferred choice for mitigating potential conflicts that might arise in proposed PPPs. For instance, a NEMA official and a SEA consultant gave clear distinction between EA and SEA, and cited the benefits of SEA as being able to combat a broad range of critical environmental and social issues at a higher level which EA often fail to address in developmental projects.

"…In my own term, SEA is an important tool that helps to address environmental issues at that critical planning stage. Yes… and I want to say critical [with emphasis] because if issues are not addressed up there [pointing upwards], sometimes it becomes very difficult to push them at the lower level… It comes down to the EA which becomes easier because issues have been properly addressed in the SEA. In EA, issues such as air, noise, and water quality are usually addressed in more detailed form…" (NEMA official. Interview 3)

"…it [SEA] is a high-level environmental tool… because if people carry out plans that have no environmental and social context, or it has no environmental and social inputs and review, or it has not gone through detailed stakeholder consultation, so at the very end you find out certain aspect of that plan cannot be implemented because of lack of input from environmental and social studies… In EA, you must define the scope, extent and the details of such project. Here, you only need to know the key concepts of such project at the lower

level, you only need to know whatever is being conceptualized because SEA has addressed most the issues at the higher level…" (SEA Expert. Interview 2)

Other practitioners stated that the consideration of environmental and socio-economic costs of developments at strategic levels of decision-making is beneficial because it can help decision-makers to better comprehend their plan or program, develop more confidence about it, and learn to improve it, for more sustainable outcomes.

> "My opinion is that it [SEA] makes sure that the environment is not forgotten, as we are looking at the economics and social benefits, we are not leaving out the cost to pay when it comes to the environment. My understanding again is that we want to look at all the alternatives that we want to open available and pick on the best alternatives with the environment at the back of our mind. Why I see it as a very good tool is because you see… the economists are looking at the profits but we environmentalists are interested in the hidden costs on the environment, especially in terms of sustainability." (NEMA Official/Interview 1)

> "…When you talk about policies and plans, there are various integrated policies of plans and projects which the stakeholders and the general public must be involved in. It is usually operated on a paradigm of social, economic and general well-being which would add value to the environment for both present and future generation…" (SEA Proponent/Environmentalist. Interview 6)

In sum, there has been a great improvement in the Kenyan SEA process since the establishment of the EMCA [Amended] Act, and the strengthening of the national guidelines. The views of the experts I spoke with also aligns with what the literature describes as good SEA. There are, however, great hopes for improving SEA through proper public education on the SEA process as well as practitioner and reviewers' capacity building and stakeholder involvement.

4.1.3 SEA Education and Awareness

A major observation recognized by most SEA consultants as a gap that must be filled within the Kenyan SEA process is the low level of public and proponent awareness about the SEA and the Kenyan process. This was considered especially important in terms of the public

understanding why SEA is done, and how they can be meaningfully involved in developmental activities that affect them the most through SEA. Most environmental practitioners interviewed agree that although SEA in theory is capable of offsetting environmental and social costs of PPPs especially in communities of proposed projects, however, more education should be provided to the members of those communities involved about what the SEA is for. NEMA being the sole authority for environmental enforcement in Kenya was mentioned by these practitioners, and they charged that NEMA should be given the key responsibility of educating the public, not just inviting communities to participate without them knowing the purpose of why they should be involved in SEA process.

> "…I think NEMA needs to do more to market the SEA process. There need to be more awareness for SEA the same way NEMA did for EIA process… SEA is still new, and so is the need to create more awareness. Many people don't know what SEA is. Do you know that there are about 47 counties in the country, with each county coming up with their master plans? Only a few of those plans have been subjected to SEA due to low awareness campaign…" (SEA Expert, interview 5)

However, NEMA officials interviewed indicated that although the National guidelines provides that SEA consultants and proponents must educate their participants of potential PPP activities within the PPP locale, as noted in Chapter 2, SEA training and education is currently being developed by NEMA in the form of a curriculum, to be utilized by experts, proponents, universities and training institutions. Like the EA curriculum developed by NEMA, the SEA curriculum will not only provide quality environmental training and coaching to all registered and unregistered EA experts and government stakeholders in the country, it will also serve as a means to indirectly educate the public, through the work of the experts, on the importance of public participation and the benefits of integrating key environmental and social impacts into strategic decisions.

"…In Nairobi, we don't have public or private institutions that offer training in SEA, as a course. As NEMA, we started working on the curriculum. We did a draft and left it for a while, but we are glad that our Education and Awareness Department has picked it up. So, as soon as we are done with the curriculum we should be able to roll it out. We shall give it to the institutions so that they can start offering it as a course or training. But right now, NEMA is doing basic training, education, and awareness. We shall continue to create awareness for the general public so that everybody out there will have an idea of what the SEA is…" (NEMA Official, interview 1).

"…Okay, let me say that it's growing. Awareness is increasing and more and more people are getting to use SEA as an environmental tool…as compared to some years back. In fact, as far back as 2008, very few people were using the SEA but now, it's prominent… But one thing that has been helping the Kenyan SEA to grow very strongly is our experts. You know some of them are doing it as their business, as consultants. The experts helped spread the EIA faster than the government. That's why we are keen to get the experts to know what the SEA is about, and has even pushed us to start the training curriculum so that they can be trained in SEA since some of them cannot afford to go out of the country and get trained…" (NEMA Official, interview 11).

SEA education and awareness creation have been identified as one of NEMA's key opportunities during a recent SEA seminar-workshop conducted at the agency's Education and Awareness Department. When introduced, the SEA course will expose trainees to methodologies, experiences and good practices in SEA that will assist sound decision making. NEMA is not removing the education requirement in the Guidelines for proponents since they clearly need to do more work too, however, capacity building, training and improving practitioner effectiveness were other key opportunities identified in the workshop as key triggers for successful SEA practice in Kenya.

4.1.4 Capacity Building

Building SEA capacity is a key drive for improving an effective and efficient implementation of SEA as noted by interviewees. Capacity building not only triggers conditions for improved capabilities, but also promotes sound development practices through SEA training

and value-added technical, institutional and professional capacities (NEMA, 2012; Partidário, 2005). I attended a recent SEA pre-training seminar workshop funded by the UK government and organized by SIDA (Swedish International Development Coop. Agency) at the NEMA headquarters in Kenya (December, 2015), which depicted an enhanced effort by NEMA to improve SEA training and capacity in the country.

The SEA seminar had the major objective of 'strengthening SEA capacity in the participants' organizations through the initiation of SEA Projects'. It was led by a Swedish SEA professional, and was conducted to prepare participants before proceeding to the full international training program in Sweden. The pre-seminar consisted a full day SEA training, presentations and discussion sessions involving NEMA staff (representatives from the headquarters and counties), environmental directors, district environmental officers, and other environmental professionals from lead agencies. According to the Chief Enforcement and Compliance Staff of NEMA, such SEA training, in addition to previously organized workshops, are continually conducted for both staff and SEA lead experts outside of NEMA to enable them to become well-rounded professionals, both locally and internationally.

> "…We found that most of our SEA experts go outside the country for their own training so we decided to organize the training here by providing more like a refresher course... We assist in providing pre-trainings and workshops to [NEMA] staff and other SEA representatives and experts who are willing to participate in our international SEA programs. An example was the recent SEA seminar organized by SIDA and the UK government. You were there, remember? Yes… I participated as a facilitator and ensured that all participants got the training…" (NEMA Official, interview 1).

Overall, interviewees felt that SEA capacity in Kenya is improving especially with the involvement of external funding agencies like JICA and SIDA. As one of the SEA experts pointed out, the National SEA guideline is still a work in progress with heavy obligations that can only be

lightened when input is borrowed from international SEA experts with greater experience implementing such requirements.

4.2 SEA in Kenya Compared to Standard Practice

There are 2 types of approaches to an effective SEA found in the literature, that is, impact-based and institution-based approach. SEA that centers on an impact-based approach to integrating environmental, economic and social considerations into plans and programs, draws on unique EIA process (Sadler and Verheem, 1996; Abaza et al., 2004). The institution-based approach ensures that higher level strategic actions such as policies, are not only driven by political dynamics, but also influenced by institutional factors that can improve governance and social responsibility (OECD, 2006). Most SEAs such as NIUPLAN and KLIP, are often considered as impact-centered since they lay emphasis on evaluating the likely impacts of a plan or program with a view to mitigating the impacts. As well, the physical and human impacts of a proposed plan or development including infrastructure projects, land use changes, and health and safety, are directly assessed with the aim of improving the economy and raise living standards (OECD, 2006; NIUPLAN 2013; NEMA, 2012).

Of the 5 urban sector SEAs reviewed, only the SEA for Integrated Urban Development Master Plan for the city of Nairobi, (NIUPLAN) spearheaded by the Nairobi County Government (NCG) and funded by the Japanese International Cooperation Agency (JICA) was assessed using both the impact-based and institution-based approaches to SEA (JICA, 2013; NEMA, 2012). Reports from the draft copy indicated that the study was conducted in all the stages of SEA recognized in the literature, that is, screening, scoping, baseline information, impact prediction and evaluation, and environmental monitoring (JICA, 2013). Although the main approach to the Nairobi SEA was impact-centered involving the identification of infrastructural needs of the city,

and taking necessary steps to reaching the set objectives of a sustainable urban development, institution-based steps taken include institutional situation analysis and socio-political assessments on the plan's managing body. The Nairobi SEA also briefly described the roles of departments and stakeholder groups, such as industries and residents, and the policy challenges presented when new and existing master plans of infrastructures are integrated. The remaining 4 urban SEAs were more impact-centered plans with a focus to integrate higher-level EIA impact prediction techniques into mitigating negative impacts and enhancing positive outcomes of PPPs (NEMA, 2015; Therivel, 2010; Abaza et al., 2004).

In comparison to the Kenyan National SEA Guidelines, SEA literature, and international SEA guidelines, the 5 reviewed urban sector SEAs showed significant differences with another in how objectives were set, screening and scoping undertaken, baseline data collection facilitated, the identification of PPP alternatives, impact prediction and evaluation, enhancement of benefits and opportunities, and environmental monitoring (OECD, 2006; Therivel, 2010; Dalal-Clayton, 2005). The following description and analysis of the reviewed SEAs on these issues is based on standard SEA practice already described above and in Chapter 2 of this research.

4.2.1 Screening

The literature describes screening as an early activity done on a strategic action to determine whether an SEA is required, and to decide if it is relevant or suitable within the capacity of the proposed area of a PPP (Therivel, 2010; OECD, 2006). The purpose and objectives of the PPP are also identified at this stage, as well, the basic concepts of the strategic action are clearly stated, understood, and meet the standard SEA regulatory and legislative provisions, depending on the country and type of development (Therivel, 2010). In addition, the Kenyan SEA guidelines provide that the screening process in the form of a 'project-brief' describing the PPP context,

timing, proponents' information, and interlinkages with other assessments is presented and reviewed before proceeding to the scoping stage (NEMA, 2012).

A project-brief was submitted as a separate report for all the 5 reviewed SEAs except for the Mombasa SEA which incorporated the brief plan description into the main SEA study. In terms of setting of PPP context, the NIUPLAN, Red Coral and Mombasa SEA documents provided extensive details of the study area including the history, conceptual study design, linkage with existing infrastructure and definition of special areas of interest. Also at this stage, only the Nairobi masterplan SEA employed various pre-screening methods and procedures such as checklists in form of questions and triggers for further study, as well as predict the likelihood of the plan to cause significant changes in the environment and the city's land use.

4.2.2 Scoping

At the scoping stage, SEA objectives, targets, indicators, and decision criteria are established. As well, use of matrices and other judgment criteria in addition to stakeholder identification and analysis is developed to help identify significant issues associated with the local area of the PPP under consideration. Other activities often established under the scoping stage include existing knowledge of the current situation, given institutional, spatial and temporal timeline, preliminary consideration of alternatives, and submission and review of a scoping report (NEMA, 2012). The 5 SEAs provided a separate scoping report in their folders, each unfolding noticeable disparities in their descriptions. While all the assessed SEA documents described the applicable policy, legal, institutional and sectoral framework for each PPP, I felt that only the Northlands SEA ineffectively described the relevance of the legal provisions to its PPP. Although the NIUPLAN, Red Coral, Mombasa, and KLIP SEAs gave a thorough explanation of the spatial, temporal and transboundary information of the PPP areas under consideration, the Northlands SEA

document was quite deficient in this aspect in that it simply described the study location as ‘a good access to road network, … airport and city center via the …railway’ (Howard Humphreys Ltd, 2014).

4.2.3 Baseline Information

Understanding the baseline information on which impacts are predicted is as essential as the SEA. It not only enables integration of objectives and indicators already identified during the screening and scoping stage, but also provides a roadmap for effective impact prediction, evaluation and environmental monitoring (OECD, 2006; Therivel, 2010; NEMA, 2012). Ideally, baseline information helps to identify existing environmental issues and problems so that strategic measures taken can improve the environment. In addition, the Kenyan SEA guideline provides that the baseline data for spatial and land use plans should be focused on anticipated impacts on sensitive areas, critical habitats, vulnerable hotspots and other important valued ecosystem components and socio-economic systems, in concordance with their implication for human activities and well-being (NEMA, 2012).

The KLIP SEA relied heavily on secondary data in identifying the existing biophysical situation of the PPP area, while the Northlands and Red Coral SEAs depended partly on secondary data along with a little input from public consultations. The Nairobi and Mombasa SEAs took a more pragmatic approach in identifying the environmental and socio-economic baseline by drawing on data from the existing master plans, as well as utilizing primary empirical data collection methods such as hydrogeological field mapping (flora, fauna, marine and mangrove surveys), transect walks, household surveys and Traditional Ecological Knowledge (TEK) using multiple stakeholder consultation techniques such as *barazas,* focus groups discussions and key informant interviews. For instance, in the Mombasa SEA, TEK was used to determine the

'accessibility of *Kaya* forests and sanctuary, and the consideration of its cultural value during implementation of subprojects…' (JICA, 2013). Furthermore, suitable indicators and methods for analyses that are more applicable to strategic plan and policy issues were identified in the Nairobi, Northlands and Mombasa SEAs, but the Red Coral and KILP SEA documents only defined and reviewed more impact-based alternatives in harmony with the existing district environmental protection measures, which was to be considered for analyses of alternatives during the detailed EIA study.

4.2.4 Impact Identification and Evaluation

In SEA, the probability of a PPP to cause significant environmental impacts are to be proactively evaluated against appropriate environmental indicators with a view to identifying the best alternatives and to phase out undesirable options (Therivel, 2010; Fisher and Gazzola, 2007). In addition, when long-term synergistic and cumulative impacts are identified in the PPP area under consideration, more transparent, sustainable decisions are likely to be made while ensuring that the socio-economic goals of the PPP are achieved (Fischer, 2007; Joao, 2005). Although documents review process indicates that planning process of the 5 cases had been drafted and alternatives to the PPP proactively identified before initiating an SEA, impact prediction in all the 5 assessed SEAs was however, based on the baseline information gathered as well as key concerns raised during stakeholders' and public consultation processes. In addition, identification and evaluation of mitigation options were determined using case scenario building, back-casting techniques, matrices and ranking methods, and case comparisons in all except the Northlands SEA which only identified impacts using simple 'SEA methodologies'.

The Nairobi SEA employed a multi-disciplinary approach to develop an extensive cause-effect link, scenario analysis and impact matrices to identify the likely environmental, social and

community health and safety impacts of the plan, which were evaluated against the probability, reversibility and magnitude of occurrence (NEMA, 2012; JICA, 2013; Therivel and Wood, 2005). Impact prediction in KLIP, Red Coral, and Mombasa SEAs was also comprehensive with an analysis of the impacts against environmental and socio-cultural indicators based on 'severity, persistence and irreversibility' of impacts. The Northlands SEA only partly gave an analysis of the major and minor impacts of the plan but conducted a 'risk assessment' to evaluate 'the chances of an event occurring' (Howard Humphries Ltd, 2014). In addition, despite Northlands being a plan proposed to cover over 11,000 acres of land, there were few options considered in the evaluation of impacts. As well, the public consultation process was not properly accounted for, and methods used for consultation were neither documented nor mentioned in the SEA documents (Howard Humphries Ltd, 2014).

Mitigation options considered in all the reviewed SEAs were based on environmental, social, economic and institutional priorities. For internationally funded SEAs like the Nairobi and Mombasa SEZ SEAs, the JICA Environmental and Social Considerations checklists, amongst rigorous public consultations, were used to select preferred alternatives. For example, through expert judgment and responses from the public, some of the options developed for solid waste management for the expanding city of Nairobi included the establishment of Material Recovery Facilities (MRFs), commissioning of an engineered landfill, and decommissioning of the existing dumpsites. The best mitigation option chosen was the integrated solid waste management (ISWM), designed as part of the MRFs initiative such that solid wastes collected from the various sources within the proposed developments follow the sustainable waste reduction techniques including sorting, recycling, composting and separation for recovery, final collection and disposal (JICA, 2013; NEMA, 2015).

SEA proactively identifies and mitigates cumulative and potential irreversible impacts of PPPs that are usually improperly addressed in a project EA (Therivel, 2010; Noble, 2005). The Northlands SEA stood out in this regard by not only providing a definition for cumulative impacts, but also documented cumulative issues, possible triggers, and mitigation measures. The Red Coral and KLIP SEAs provided neither a definition nor a summary of cumulative impacts, but only identified the probable 'long term' impacts from the operation phase of the plans. The Nairobi and Mombasa SEAs provided a summary of potential cumulative and irreversible impacts, as well as techniques for prevention and monitoring during the implementation of the master plans. For instance, 'increased groundwater pollution, and escalated erosion of biodiversity' were some of the predicted cumulative and irreversible tendencies due to land-use change in the Nairobi SEA while 'roadside reforestation and planting on communal sites…' was a proposed technique to prevent excessive loss of forest cover in the Mombasa SEA (JICA, 2013).

4.2.5 Impact Mitigation and Enhancement of Opportunities

During this stage, the impacts predicted and identified are brought to bear with a view to minimize or mitigate any negative impacts while enhancing opportunities for the positive outcomes, in more sustainable ways (Therivel, 2010). In addition to selecting the best PPP alternatives, SEA also considers a broad range of mitigation measures that are more appropriate for strategic level decisions that not only augment development challenges, but also provide a platform where decision-makers collaboratively reach a compromise that will improve the environment while enhancing socio-economic gains (OECD, 2006; UNEP, 2012).

The Nairobi, Mombasa and KLIP SEAs were outstanding in this aspect by providing a long list of mitigation measures for both construction and operation stages of the plans. For a water and chemical-intensive industrial plan like the Kinanie Leather Industrial Park (KLIP) SEA, one of the

strategic mitigation measures proposed at the operational phase was a mechanical Effluent Treatment Plant (ETP) to treat the emerging heavy-metal polluted effluents before discharge into sewers and natural water courses (REPCON Associates, 2015). As well, a sanitary landfill that will manage anticipated huge quantities of heavily polluted leather waste materials was proposed, while a detailed EIA on the landfill will be conducted to ensure an impermeable membrane that will prevent the outflow of the chrome-loaded leachates into the environment is developed (REPCON Associates, 2015). Although the Northlands SEA predicted few major and minor impacts, about ten recommendations referred in the document as 'mitigation measures' were proposed with attention paid to water, energy and waste infrastructures, while Red Coral SEA provided only recommendations that would minimize 'negative environmental and social impacts' (Red Coral Properties, 2014). The Nairobi masterplan stood out of other SEA documents by providing a side by side mitigation and enhancement techniques to each environmental and social impacts identified. For example, the Nairobi SEA consultants acknowledged the creation of more jobs through 'construction of sub-centers' as one of the opportunities to enhance decongestion of the city's Central Business District (CBD). Although I think the strategic decisions taken in most of the assessed SEAs are superficial, overall emphasis on providing detailed mitigation procedures were laid during EIAs of each proposed project developments.

4.2.6 Environmental Monitoring Plan

A monitoring plan ensures that the proposed mitigation measures are executed and that the impacts and concerns earlier identified are rectified (Therivel, 2010; NEMA, 2012). Also, the environmental baseline objectives identified, as well as other cumulative impacts are monitored sustainably for future strategic actions (NEMA, 2012). All the SEAs included a framework for monitoring and evaluation with attention paid to the implementation of the PPPs, although with

varying length of detail. Comprehensive monitoring techniques were proposed in the Nairobi and Mombasa SEAs including a summary of possible impacts and mitigation measures, the scope, frequency and timeframe for impact monitoring, the responsible institutions for implementation of mitigation and enhancement measures, and training and capacity needed to successfully implement the plan. Other SEAs proposed almost similar monitoring techniques but the Red Coral and Northlands SEA consultants made extra effort to develop a field policy, monitoring and performance indicators, and a reporting strategy. None of the documents provided a public engagement plan for the implementation and monitoring phases of the proposed action but all the SEAs concluded that site specific and sector-specific measures will be developed in detail in the EIAs of resulting projects.

4.2.7 Public Participation

Sustained public participation has been considered critical and essential for an effective SEA (IAIA, 2002; Petts, 1999). The Kenyan SEA guidelines also provide that PPP strategic decisions must be taken and should be actioned within the communities of the stakeholders who are likely to be most affected by the PPP, while at the same time availing the public the opportunity to influence decisions (NEMA, 2012; Fisher and Gazzola, 2006). A stakeholder analysis was done in all the reviewed SEAs to identify the primary stakeholders, often described as the most impacted, and the secondary stakeholders.

Although the Red Coral and Mombasa SEAs provided a list of community and institutional stakeholders consulted, the Red Coral report did not document a proper analysis of how they were identified. KLIP and Mombasa SEAs identified their stakeholders based on Fundamental and Legal Right Holders (FLRH) in the PPP area, but the Northlands SEA took a different approach to its stakeholder analysis by providing a 3-page stakeholder identification and categorization

based on the level of impacts to the stakeholders. The Nairobi Masterplan SEA was the only report that developed a separate public engagement plan comprising a list of primary and secondary stakeholders, the approach and capacity to information dissemination, and the media used for public engagement activities such as radio and television advertisements, emails, newspapers, posters, letters and the plan's official website.

In the stages of SEA process (e.g., scoping etc.), the Red Coral, KLIP, and Northlands SEA relied only on the use of questionnaires to draw responses from the public during the scoping stage of the PPP. Nairobi and Mombasa SEAs were the only documents that held thorough scoping stage consultations, and provided a summary of emerging issues from the scoping meetings. Although all the SEAs reported issues arising from the overall public consultation stage of the SEA, only the Nairobi plan presented concerns in the detailed SEA study. The public consultation processes of the two selected SEA case studies will be discussed in detail in the next chapter of the thesis.

4.3 SEA Analysis and Performance Criteria in Kenya

While not completely ruling out the inconsistencies identified from the above review of the 5 urban sector SEAs, there are notable improvements in the Kenya SEA practice. The remarkable improvement, according the interviewed experts, is partly owing to the amended legal provision for SEA which necessitates initiation of an SEA in every proposed PPP in Kenya, as well as increasing SEA awareness and training which has made it a preferred environmental working tool over other EA tools. The irregularities still lingering within the Kenyan SEA system is majorly on SEA reporting, EIA-based focus of the SEAs themselves, public involvement, and follow-ups through monitoring, which has partially resulted from its growing national experience and limited capacity. Moreover, Fischer and Gazzola (2006) described inconsistencies in SEA as not

necessarily disadvantages but an opportunity for the process to blend in within the PPP context. In the same study, Fischer and Gazzola (2006) pointed out key SEA effectiveness criteria described in Table 1 above as integrated, inclusive, sustainability-led, iterative, transparent and participative. However, owing to various disparities in the assessed SEA documents, it is hard to generalize and compare the effectiveness criteria to the Kenya's SEA practice but few similarities in strengths and flaws can be argued.

An effective SEA should be initiated at the early planning stage and must be integrated into the entire PPP planning process (Fischer and Gazzola, 2006). In addition, not only should environmental uncertainties of PPPs be proactively considered in an SEA, social and economic aspects of strategic actions must also be duly contemplated in all the stages. The reviewed SEA documents, coupled with interviews with SEA professionals showed various evidence that environmental, social, and economic facets of each PPPs were considered. For example, an all-inclusive public participation process was followed in Mombasa and Nairobi masterplans, evidenced by the presence of different stakeholders, CBO groups, NGOs, as well as the marginalized section of the public including women and youth. While expertise from SEA professionals and participating stakeholders were used to determine the likely environmental impacts of the plans, input from the local groups defined the social and economic costs of implementing proposed plans.

> "…We involved the stakeholders during the scoping stage and during the detailed SEA study. We consulted widely…and their input brought a lot of insight to our work. They could identify and inform planners beyond the floodplains, and water pathways... We know all the environmental situations at the national and local level, but we sought opinion from the public, looked at the environmental situation as it was and came up with best sustainable solutions..." (SEA Expert, interview 2)

However rigorous some of these SEAs are in terms of seeking public opinion, there is still room for improvement in other SEAs like the KLIP, Red Coral and Northlands plans that relied heavily on secondary data, since current socio-economic issues of developmental activities might require more practical than the desktop approach to decision making.

An inclusive and sustainability-led SEA assesses and identifies more sustainable PPP choices in all the planning stages including scoping, baseline, impact mitigation and enhancement, and environmental monitoring, and can consider higher-level tradeoffs (Fischer and Gazzola, 2006). This was evident in most of the SEA documents not only because the laws have been amended to include wise sustainable development activities in the country, but also the national SEA guidelines have provided clear sustainability recommendations such as repetitive consultations and creation of a situation analysis that can both enhance positive outcomes and mitigate negative ones (NEMA, 2012). In the Kinanie leather SEA for instance, one of the proponents reaffirmed that the introduction of Cleaner Development Mechanisms (CDMs) alongside manure recycling processes, sanitary landfills, and a common ETP are some of the most sustainable monitoring systems that will be constructed way before the start of the plan. This will not only be of benefits to community members, but will also to phase out probable sustainability flaws that might arise.

> "…The KLIP is of environmental concern which we have promised the community members will be managed sustainably…We proposed greener tanneries where we have the scramblers that will make sure emissions are taken care of. We also proposed to use CDMs and build a CETP early in the plan which will treat all effluents channeled from all 3 tanneries. CETP and sanitary landfills are sustainable, but we hope to make feeds and organic fertilizers from flesh trimmings, which are way more sustainable" (SEA Proponent, Interview 6).

The IAIA (2002) performance criteria also recognized a SEA as participative, by ensuring that public views and input are well considered, should provide useful, reliable and timely

information, and ensure maximum public access to pertinent information on specific PPP decision-making process. Most of the SEA documents reviewed addressed public concerns and provided access to each document on the internet, while other documents failed in this regard. As pointed out by some of the SEA consultants, some of the questions raised were not addressed because public concerns are often unlimited. In addition, information on some the SEAs was inaccessible as majority of the public had little or no access to the internet. A more precise summary of public input in local or understandable languages will not only give participants hope that they own the projects, but will also strengthen the Kenyan public participative SEA that is geared towards sustainability (Okello *et al*, 2009).

SEA is iterative and transparent when it informs and improves the PPP planning process as timely as possible, in a progressive decision-making pattern that is conducted with rigor, flexibility, fair-mindedness and competence (IAIA, 2002). Evidenced by the reviewed SEA documents and recognized by interviewed stakeholders and representatives of Nairobi and Machakos planning department, most of the SEAs were very objective and thorough in their strategic assessments. Although there was a late initiation of SEA in the plan process, SEA was conducted and recommendations were proposed to inform the entire planning process. In the established Environmental Monitoring Program (EMP) frameworks for each SEA plan, SEA recommendations were used to amend the masterplans and the subsequent EIAs of specific infrastructures.

> "We were funded by the Japanese developers who also had a parallel office with the planners whose study was a little bit marked ahead than ours… They had already done their plan and by the time the environment and social team came up with our findings, we thought some alternatives had to [be revisited,] especially in certain areas… It was tough but eventually they listened because the SEA has to inform the plan in form of recommendations. We ended up agreeing as a team [smiles]" (SEA Consultant, Interview 2)

> "…Kinanie is under the jurisdiction of a county government, which has already started their own strategic planning. This means they have to accommodate the KLIP into their own planning and development program. For instance, the infrastructure needed to successfully plan the proposal lies within the jurisdiction of such development hence, the need to meaningfully involve all stakeholders and planners within project location and the need for the SEA to inform the plan is essential for harmony in planning (SEA Proponent, Interview 6)"

The reviewed SEA documents also described how sustainability issues will be accounted for, as well, roles of lead environmental agencies in charge of EMP agenda were properly described. In a response given by an SEA consultant, when there is trust and commitment between proposed projects and the community members, not only will the plan be socio-economically satisfactory but also environmentally sustainable.

> "My own understanding is that for any plan to be sustainable, it must be technically viable, economically sustainable and socially acceptable. So, we looked at the capacity of the project to be supported by available resources, especially hides and skin, water, downstream impact, atmospheric liquid and effluent pollutants. Social acceptability was based largely on stakeholder concerns. For example, the residents were already concerned that there was an existing sewage treatment plant built by the same proponent, and improperly managed. The community members complained of not benefiting positively from such projects yet the same proponent is planning a bigger project. We reassured them of our commitments and noted all those considerations when selecting the plan alternatives" (SEA Consultant, Interview 5)

Transparency, however, remain unclear in the SEAs as most of the stakeholders and especially the local participants are weary as to whether sustainability concerns of the plans, especially related to solid and liquid waste management will be truly addressed, as promised in some of the past SEAs. Detailed exploration of the extent of public participation in the 2 selected case studies will be further presented in the next Chapter of the thesis.

4.4 A Focus on SEA Solid Waste Management Consideration

While the Environmental Management and Co-ordination (Waste Management) Regulations (EMCR) of 2006 remains the legal framework for solid waste management in Kenya,

the National Solid Waste Management Strategy (NSWMS) was compiled by NEMA as the 'best practice' solid waste management in the country. Owing to the poor state of SWM in Kenya, the NSWMS was published in alignment with EMCA (Amended) Act 2015 and the 2010 Constitution of Kenya as a partial fulfillment of the Kenya's Vision 2030 which aim to raise the economic base of the country through industrialization, waste management and poverty eradication (NSWMS, 2015). Consequently, schemes for waste management in Kenya were developed and are guided by the 'zero waste principle' whereby waste generated are viewed as a resource to be utilized for wealth and job creation while reducing pollution to the environment (NSWMS, 2015; UNEP, 2012).

Since all the 5 reviewed SEAs are for urban related plans and given the goals of the central government, I considered waste issues as being a clear focus of each SEA. I found that each SEA had a separate solid waste components in their reports, but that only the Nairobi, Red Coral and Northlands SEAs aligned their solid waste options with the NSWMS. Options specifically chosen in the Nairobi SEA include improved collection and transportation system, closure of existing open landfills, and construction of Material Recovery Facilities (MRFs) where wastes collected shall be segregated for compositing in the case of biodegradables, and recycling of non-biodegradables. In the Red Coral and Northlands SEAs, waste generated shall be collected in covered trucks to a designated transfer site for sorting and segregation for recovery, reuse, recycling, composting before eventual disposal by sanitary landfilling or incineration (JICA, 2014; Red Coral Ltd, 2014).

More interestingly, the Northlands SEA consultants, who also conducted the Red Coral SEA, proposed an anaerobic digestion facility for biogas collection, composts, and home gardening systems, as well as encouragement of the 'polluter pays principle' for handling hazardous waste generated during the operation stage of the plan (Red Coral Ltd, 2014). The

Mombasa SEA contained less information on solid waste management but the consultants proposed reduction and recycling systems, as well as the installation of cleaner development mechanisms (CDMs) to reduce greenhouse gas emissions and to minimize waste and effluent generated from industrial activities. The KLIP SEA took a more careful approach by proposing to build a waterproof sanitary landfill site where hazardous leachates from tanneries will be recovered, and solid hide and skin waste will be recycled in commercial quantities. Again, the overall conclusion for waste management strategies in the documents was that specific pollution control measures will be developed in detail at the EIA level.

Although city county governments are charged with the responsibility of SWM within their jurisdiction, the Kenyan waste strategy specifies that the preferred hierarchy for waste management within the current disposition is a reduction, reuse, recycling, composting, recovery, incineration and sanitary landfilling (NSWMS, 2015; UNEP, 2012). More importantly, for SEAs of urban waste plans and programs, the waste management hierarchy must integrate social, economic and environmental aspects of development into PPPs (Abter, 2005; NEMA, 2015, OECD, 2012). A brief description of the waste hierarchy, in accordance with how they were approached in the reviewed Kenyan SEAs, is given below to bring into more focus the SEA process followed in each case.

4.4.1 Waste Prevention and Reduction

According to the NSWMS, waste prevention is the preferred action for keeping waste out of the management stream. In growing cities where waste generation cannot be prevented, an essential policy action to be taken is to reduce waste volumes that can be managed before disposal (NSWMS, 2015). The best way to achieve this is by reconsidering the need for the product, reusing waste in its current form and redesigning a product to lessen its waste potential (UNEP, 2013). In

the 5 SEA documents reviewed, waste prevention was not explicitly proposed as a waste management mechanism based on the assumption that the proposed PPP areas have already existing huge waste challenges that needed more urgent response other than the prevention approach. In the Nairobi and KLIP masterplan for instance, the proposed waste reduction mechanisms were to encourage industries and consumers to improve the life cycle opportunities of waste items by the re-use of waste materials. One of the Nairobi city county interviewees agreed that this will go a long way in reducing the amount of waste for final disposal.

> "In the Nairobi masterplan, the integrated solid waste management was proposed... The chosen alternatives will encourage reuse of materials like shoes and bags, and reduction and recovery of material items from waste. When we reuse waste, we extend the life cycle of such materials which often time is a good thing for the economy. Disposal of high volume of waste is also minimized in this process. I also believe that the integrated plan will work because not only is it important to recover and reduce waste generated, you also have to educate people and direct them to technologies on how to achieve this. With proper education and capacity, it will work…" (Environmental Professional. Interview 12)

Further, since waste generated could be properly managed when separated at source (UNEP, 2013), sorting, one of the easiest yet challenging waste management procedures should have be proposed in the SEAs as there are potentials for it to lead to a successful ISWM in Kenya if adequately given prompt attention.

4.4.2 Waste Sorting, Recycling, Composting and Recovery

Waste sorting, also referred to as segregation, alongside recycling and recovery are different physical waste management activities but also the preferred approaches to reclaim waste from the management stream (NSWMS, 2015). Sorting and recycling in Kenya are often carried out at the dumpsites by various section of the cities' poor who scavenge and pick waste for income and survival (JICA, 2013). When interviewed, a NEMA city county representative recommended sorting at source as an easy way for collecting waste for further recovery or recycling activities.

Sorting in Kenya is weak partly owing to shortage of color-coded bags or bins given in the NEMA guidelines for segregated waste, but majorly due to low awareness on the importance of sorting at home (NSWMS, 2015).

> "Sorting of waste at point source has not worked [in Nairobi]. I will tell you that we have tried it many times but it has not worked. Even the labelled bins we have put on the streets, an initiative of the County Government, has not been successful because people don't know how to use it. So, because of that we proposed and agreed that we will still have a place for sorting in our Dandora disposal site, where we will be able to sort out any waste that has been mixed up and the waste that cannot be reused… and whatever cannot be reused will be incinerated on the site to recover energy, and only the ash will be taken to the final site in Ruai as proposed in the plan." (NEMA Official. Interview 11)

Recycling, comprising composting or anaerobic digestion, is the next ideal action where waste such as plastics, metals, glass and paper are converted into reusable materials within the same product cycle. Recovery on the other hand occurs where waste that cannot be transformed are subjected to specific processes for energy and material recovery, also known as waste-to-energy (WTE) or energy-from-waste (UNEP, 2012). Waste recycling and recovery were proposed in all reviewed SEAs as one of the best options to manage solid waste in the new developments however, explanations as to how practical or successful these can be achieved was not documented in the Red Coral and Northlands draft SEA reports. One of the lead NIUPLAN environmental professionals interviewed admitted that when waste from growing cities like Nairobi are recycled and energy recovered, not only are the cost of limited material resources reduced, but also the volume of waste that are finally disposed is minimized.

> "I also think we need to have a government taking the lead on SWM [by prioritizing it]. I recently visited outside Kenya [neighbouring country] and I realised that their government is busy with the management of waste. They are really not into making profit out of SWM, but rather they are managing for the sake of the environment. For instance, in that country there is waste collection, there is no illegal dumping and more so what is my waste is your raw-product. So there is a consensus, and the cost of raw materials is reduced. If I collect

> waste and give it to you, then you should be able to make resources out of it... which can make the waste very minimal. This is what Kenya should practice." (Environmental Professional. Interview 9).

Since public awareness creation was also documented in 4 of the SEA documents as a major drive for an effective waste recycling and recovery, one of the strategies proposed and recommended in the Mombassa, NIULAN, KLIP and Red Coral SEA draft reports was to hold a public *baraza* that will educate the public on the many benefits of the 4Rs, and providing essential trainings to the waste-based CBOs and self-help groups (NEMA, 2013).

4.4.3 Waste Collection, Transportation, and Disposal

Waste disposal is the last and the most common on the waste management hierarchy. Disposal often involve waste collection and transportation to and from designated transfer stations or skips, and dumping into landfills without energy and material recovery (NSWMS, 2015). In addition, for waste that can no longer be transformed it its present state nor undergo further recovery processes, the NSWMS suggests that pretreatment measures on waste volume and composition should be conducted to curtail the size and harmful nature of the waste before disposal. In 4 of the 5 reviewed SEAs, it was recognized that waste would be sorted and collected in sorting bins, and kept in transfer stations until the CCG collects for final disposal. The NIUPLAN, Northlands, and Red Coral SEAs specifically suggested that prior to final disposal, food, and other biodegradable waste from the developed cities will be segregated as animal feeds or composted as fertilizer manure, while plastics and other recyclables would be separated and taken to the recycling facilities rather than disposal at the dumpsite.

Furthermore, NIUPLAN, Mombassa and KLIP SEAs proposed to build sanitary landfills that will manage waste and minimize ground and surface water pollution. For instance, as earlier described, an impervious sanitary landfill that will soak up heavy metal effluents from proposed

tanneries was proposed in the KLIP SEA, whereas MRFs will be built in Nairobi and Mombasa plans, to ensure that waste is proper segregated, recycled and recovered before disposal. Transfer stations that will accommodate waste from Northlands and Red Coral projects were proposed, and will be designed to recycle and recover valuable materials. Most of the assessed document did not describe how waste will be collected and transported but the Nairobi plan emphasized the need to provide more trucks and expand CBO base for effective waste transportation within the city (JICA, 2013).

4.5 Chapter Summary

SEA and SWM in Kenya have recorded a remarkable progress in their practice although with notable contrasts when compared to standard practice. In terms of the performance and analysis criteria described in the literature above, only 2 of the 5 reviewed SEA documents incorporated consistency, inclusiveness, and rigor into its baseline, scoping, impact prediction, participation, mitigation opportunities, monitoring framework and entire planning process. While SEA was considered by many of the interviewees in the first stage of the research as an effective environmental management tool that can address critical environmental concerns, some of the weaknesses to be addressed include more SEA public education and awareness campaign-which is mandated by the National SEA guidelines to be mostly undertaken by SEA consultants and proponents, increased capacity and training of SEA experts, as well as clarity in SEA reporting.

In terms of solid waste component, most of the reviewed SEA documents partially employed the waste management hierarchy described in the National Solid Waste Management Strategy as the best practice SWM. For larger cities like Nairobi and Mombasa, waste prevention was less of a priority, owing to the increasing waste management challenges already facing these cities. The population of communities in the proposed areas of the Northlands, KLIP, and Red

Coral SEAs is presently insignificant, thus, waste prevention and reduction mechanisms that will handle probable high waste volumes were proposed. In addition, recycling, composting and recovery facilities, also known as MRFs, were acknowledged in all the SEAs as the best ways to increase life cycle opportunities of waste materials while ensuring minimal waste disposal at dumpsites. While there are existing self-help groups, CBOs, and individuals that engage in ground waste handling and recycling, increased awareness, CBO capacity and skill building, as well as adequate waste collection and transportation mechanisms were some of the notable gaps recognized in the documents that should be addressed for an effective SWM.

5 Public Participation in SEA: Detailed Review of Two Case Studies

Although meaningfully involving the public in strategic decisions has been perceived as a key component in the EA and SEA governance toolkit, it is often accompanied with noticeable inconsistencies such as in the Kenyan context described in Chapter 4 abve. In this Chapter, an overview of the 2 selected case studies is presented. The importance, methodology, stages, and opportunities for public participation in the 2 case study examples will also be described. Finally, the categories of participant involved, the conditions of learning, how and if public input were utilized in the 2 study cases are reviewed for detailed analysis.

5.1 The Integrated Urban Master Plan for the City of Nairobi

The Nairobi Urban masterplan, also referred to as NIUPLAN, was developed to integrate all existing masterplans and programs of sectors and infrastructures to achieve the best sustainable outcomes. This was conducted as part of Kenya's Vision 2030 in one of the goals aimed at reducing poverty to the barest minimum while promoting economic growth and raising living standards (NIUPLAN, 2014). According to the NIUPLAN SEA report, the baseline situation of Nairobi indicates that the city is presently confronted with vast environmental and socio-economic challenges such as air, land, water, and noise pollution, and improper solid and liquid waste management. Other problems include urban sprawl, low level of employment, crippled infrastructure, traffic and housing congestion which has led to encroachment into river basins and riparian zones, and fragmentation of agricultural lands to meet increasing housing needs of the city (NIUPLAN, 2013).

To ensure that development aligns with the principle of sustainable environmental management and planning, NIUPLAN was subjected to an SEA. The main purpose of the SEA was to ensure maximum environmental protection by ensuring that all environmental concerns are

integrated and mitigated early enough at the SEA stage to inform the final design of the masterplan and ensure any potential significant strategic impacts are considered. The main objectives of the study were; to guide and ensure that proposed PPPs in the masterplan follow the principles of sustainable development; to assess regional multiple sectoral developments, and ensure that their consequent environmental and social impacts are evaluated over time; to ensure that the probable direct or indirect impacts, as well as cumulative or irreversible tendencies are phased out at the earliest stage of the planning cycle, and lastly, to ensure that the precautionary, sustainability and polluter-pays principles are incorporated into development decision frameworks that will deliver responsible policy choices of the PPP.

NIUPLAN was initiated by the Nairobi City County and conducted by Gibb Africa, a JICA appointed study team, who in compliance with the National SEA guidelines and the JICA Social and Environmental Checklists, came up with the draft SEA study in 2013 (GIBB Africa, 2013). Consequently, with efforts from NEMA, and other lead environmental agencies like Nairobi City Water and Sewerage Service, Kenyan Urban Roads Authority, Kenyan Power, and representatives from various City Departments, NIUPLAN draws on collaborative planning and establishment that will provide green policy options and environmental safeguards during its final implementation (NIUPLAN, 2013).

5.2 Proposed Kinanie Leather Industrial Park SEA

The Kinanie Leather Industrial Park (KLIP) masterplan, initiated by the Ministry of Industrialization and Enterprise Development (MOIED), and delegated to the Exporting and Production Zones Authority (EPZA) was conducted by REPCON Associates. Also as part of Kenya Vision 2030, KLIP masterplan (known as the 'Leather City') aims to boost the contributions of industrial sectors to the GDP growth of the national economy (EPZA, 2015). Currently, there

are 14 tanneries that are operational in the country, having a maximum potential to process about 2.28 million hides and 18.6 million skins (EPZA, 2015). It is estimated that the leather sector contributes about Ksh15 billion ($US150 million) per annum, and is expected to generate 10 times more by 2020 through the export of more final products than the semi-processed (wet blue) leather. The proposed KLIP, therefore, is to not only address the challenges of trade deficit within the leather trade sector, but also promote a rise in exports by at least $US1 billion (EPZA, 2015).

The proposed KLIP is in Kinanie community, positioned on the banks of the Mbagathi River about 16 kilometers along the Mutonguni road between Athi River and Kangundo Road, in the outskirts of Machakos County and 35 Kilometers from Nairobi (Figure 4). The site consists of 500-hectares of land that has been proposed to house up to 36 tanneries that will convert animal hides and skins to semi-finished and finished leather products (EPZA, 2015). Additionally, 8 complementary leather parks will be developed that will add value to the leather produced from the tanneries, by transforming them to exportable high-valued finished goods. In addition to an existing sewerage treatment plant, other infrastructure that will be developed on the site include roads, curvets, power stations, sewer and storm water drains, water supply systems, a Common Effluent Treatment Plant (CETP) that will treat and recycle waste water, and a sanitary landfill that will manage solid wastes generated from the tanneries and other land uses. Support developments for the site include administrative buildings, housing estates and a Trade Center that will not only encourage SMEs to locally promote and market the highly-valued leather materials,

but also, tanning and value addition activities will be established mainly for research, innovation and quality control in processing and production of quality skins and hides (EPZA, 2015).

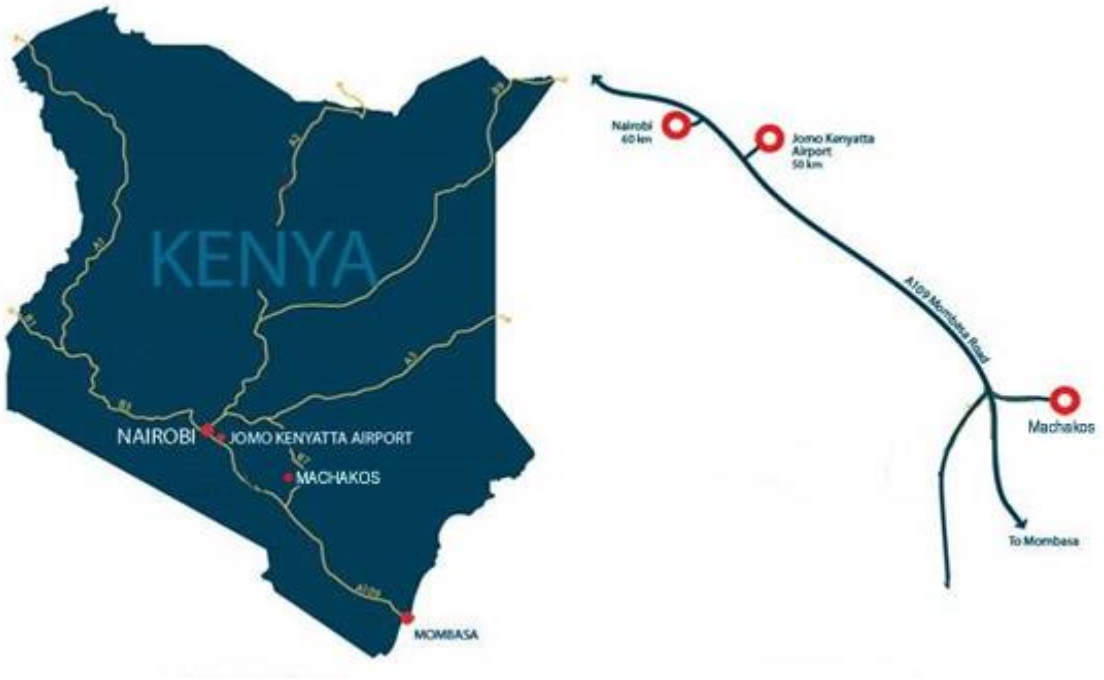

Figure 4: Proposed Location of the KLIP Plan (Source: Machakosinvest.com)

Since the proposed infrastructure and development have the potential to pose significant risks to the social and environmental dynamics of the region, an SEA was required for KLIP, in alignment with the National Guidelines for SEA to ensure that the proposed plan is well-suited within the sustainable environmental planning and management framework of Kenya (NEMA, 2012). Other objectives of the SEA were to ensure that environmental, social and economic standards are properly evaluated at the early stage of the masterplan, to assess and clarify stakeholder concerns against potential points of conflict with the proposed masterplan, and lastly to develop wise policy options that will ensure environmental sustainability and social justice.

5.3 Participants Involved in the Two Selected Cases

Table 8: Groups of Stakeholders Involved in the NIUPLAN SEA Case Study

Categories of Stakeholders	Groups Involved
General Public	The Vulnerable (Physically Challenged, Women and Youth) The Marginalized (Slum dwellers) The Less Educated The Low-Income Earners CBOs (Individual and Self-help Groups) NGOs
Other Stakeholders and Beneficiaries	City Inhabitants Non-residents Social, Educational, Religious and Cultural Institutions Representatives of Bordering Counties Business persons
Government Agencies	Ministry Delegates County Authorities Proponents NEMA Officials Private and Government Research Institutions Government Stakeholders (MOE, KPLDC, KIRDI)

Table 9: Groups of Stakeholders Involved in the KLIP SEA Case Study

Categories of Stakeholders	Groups Involved	Interest Type
Fundamental Right Holders	Project Affected Persons Existing Local and Private Business Owners Proponents	Right to a Clean and Healthy Environment Right to Information Right to Take Development Directives

Legal Mandate Holders	County Government Ministries and State Departments Local Authorities Government Agencies (e.g. KIRDI, KLDC) NEMA Officials	Right to Information on Existing and Proposed PPP Developments
Other Interest Holders	Private Land Owners Jurisdictions within Plan Location Potential Investors of the Plan	Right to Information on Land Use Changes and Business Developments

The reviewed documents, coupled with expert responses from people involved in the two selected cases revealed that there were different categories of participants that were invited to participate. In Table 8, the participants of the NIUPLAN SEA are categorized under three major groups namely; 'the general public', 'other stakeholders and beneficiaries', and 'government agencies'. In the KLIP SEA, one of the SEA consultants pointed out that 3 distinct categories of participants, were identified in the study as Fundamental Right Holders (FRH), Legal Mandate Holders (LMH) and Third Party Interests (TPI). Table 9 establishes participants' stakes in the plan as either a fundamental right to a clean and healthy environment, a right to information or a right to take directives on plans and project developments provided in the 2010 Kenyan Constitution as well as EMCA Act of 1999 (Table 9).

> "To identify the public, we looked at the Legal framework and identified all the Fundamental Right Holders and the Legal Mandate Holders already living in that area. We also identified Third Party Right holders, these are called interest holders since they do not belong to the above 2 groups. They are the prospective investors, -which we haven't met since we are still in planning phase of the project…" (SEA Consultant. Interview 5)

In the NIUPLAN SEA, the first group invited to participate was the general public, being that they have a direct interest in all proposed plans and programs. It was noted in the documents that part of having a direct stake meant that, not only do these participants have a fundamental understanding of the baseline condition of proposed PPP areas, they are the ones that will be

affected most by any environmental or socio-economic impacts of projects (NIUPLAN, 2013; UNEP, 2013). These people were also partly referred to in the KLIP SEA as Fundamental Right Holders (FRH), identified as local residents and land owners who have the traditional rights to the land based resources and other strategic interests within the PPP area. Although, 'affected citizens', 'proponents' and 'local business owners' all fall within the FRH category, but priority is given to the affected citizens due to poverty, marginalization and inadequate access to sustainable food and water supply they are often exposed to (Table 9).

An SEA consultant and a NEMA official both expressed satisfaction with the public participation process in the NIUPLAN SEA because not only did the engagement focus more on the vulnerable and the marginalized members of the public including women, children, the physically challenged, slum settlers and people living with HIV/AIDS, opportunities were also availed all the groups to partake in problem-solving activities about the plan and its potential impacts on them and their environment. The involvement of the less privileged in developmental activities agrees with the literature as reviewed in Chapter 2 of the thesis (e.g. Therivel, 2010; Sinclair and Diduck, 2001; Okello et al., 2009) in that not only is it able to improve social and political equity of all interests' holders and resolution of conflicts with other stakeholders, but can also serve as a platform for collective democratic and deliberative problem solving.

> "I participated in the meetings and I think the public consultations were thoroughly done. Why I think they did it well is because … they did the consultations all the way down to the grassroots, I mean the local people. They went to the informal settlements, the children where they were engaged in drawings and debates…[about] what they want Nairobi to look like in the future… it was interesting and amazing. The disabled were also involved so you see… the public consultations were very comprehensive. They also involved the women and youth. They [women] were able to speak out and make good and helpful suggestions about their lives, their environment, the masterplan and Nairobi in general" (NEMA official. Interview 1).

Another group of participants that were recognized in the two SEA cases are the government stakeholders and agencies who participated either because they may be indirectly affected by the plans or that they have existing or stale information on the development, such as the old masterplans that should be considered in the development of a new one (NIUPLAN, 2015). Moreover, depending on context and intensity, Fischer, (2007) and Sheate et al., (2001) pointed that extensive involvement of stakeholders, policy makers, enforcement agencies, and the broader public is critical for a successful and effective SEA decision-making. 'Other land users' and third-party participants are referred to as groups whose interests are outside the two categories described above but might have unofficial access and private lands within the jurisdiction of the masterplan area (KLIP, 2015).

5.4 Techniques and Methodologies of Engagement Employed

Many methods were utilized to involve the various groups noted above in the SEA processes, but the common ones included; Basic Consultations, Extended or Full Participation, and Communicative Reporting (Fischer, 2007; Therivel, 2010; Heiland, 2005). In the literature, Basic Consultations take the form of plan inquiries, interviews, questionnaires, workshops, and telephone calls that are conducted to disclose PPP intentions and information while creating opportunities for stakeholder inputs (Therivel, 2010). Full Participation, on the other hand, may involve a wider and prolonged means of informing, actively involving and empowering the public through exhibitions, citizen juries, field visits, public meetings, and Focus Group Discussions (Fischer, 2007; Therivel, 2010). Newsletters, newspapers, open house fora, television and radio media are some examples of Communicative Reporting methods that gives the public an opportunity to give feedbacks and influence planning decisions (Therivel, 2010; Fischer, 2007).

Most of these techniques were utilized in the 2 selected cases, but a lot more were deployed in the NIUPLAN SEA compared to the KLIP plan (Table 10).

Table 10: Techniques for Stakeholder Engagement in the NIUPLAN and KLIP SEA Cases

SEA	**Formal Representatives**	**General Representatives**
NIUPLAN	Official Letters Emails Text Messages Phone Calls Interviews Questionnaires	Public *Barazas* Television Radio Newspapers Posters Websites
KLIP	Key Informant Interviews Consultative Meetings Focus Group Discussion	Public *Barazas* Field visits

From Table 10 above, methods used for public engagement in NIUPLAN SEA are like some of the examples mentioned in Basic Communicative and Extended public participation techniques. During the scoping stage of the plan, official letters, emails, text messages, and phone calls were used to engage formal representatives such as institutions, government agencies and enforcement representatives. In the case of wider stakeholder engagement, television and radio advertorials, newspapers, posters, websites, and public *barazas*, a Swahili name connoting public meetings and gatherings, were the communicative techniques utilized. In the KLIP SEA, the mode of engagement was based on the targeted stakeholders. For instance, one-on-one and key informant interviews were conducted with tannery operators, institutions, and formal representatives. According to one of the SEA consultants in the KLIP SEA, individual interviews were conducted with the formal groups to get first-hand information on land matters pertinent to the plan, and to

avoid power imbalance and loggerheads that might occur if they are being interviewed together with the general public.

> "We held public meetings with the general public including communities that will be hosting the leather city and other local business owners, but then, we met each of these second groups separately, basically through one-on-one interviews since they hold important government positions…and we do not want a situation where there will be conflicts and aggressiveness assuming there was a public forum involving both groups, in the same venue…" (SEA Consultant. Interview 5)

In the case of the general public consultations, workshops and FGDs were conducted for stakeholders such as leather traders and organized groups, while public *baraza* were mostly used to obtain opinions of host and neighboring communities who might be directly or indirectly affected by the plan (EPZA, 2015).

5.5 Noted Benefits of Public Participation in the Two Cases

According to the SEA documents, as well as data from the interview responses of both participants (i.e., formal and general) that were involved in the cases research, it was recognized that public participation has a high potential to not only integrate a wide range of public interests and views into development activities, but also create an enabling environment where the public own the projects, encourage community-practitioner relationships that has a potential to lessen the likelihoods of conflicts and controversies with proposed PPPs.

> "…Yes, I participated. I was in all 4 workshops we had with stakeholders, and I attended 3 public meetings. I gave the SEA presentations in the workshops. We actually recorded most of the issues and questions that were raised, analyzed and put it in a report... just to get a view of what people think about Nairobi and how we could do it better. You see, in whatever you do, if you don't involve the people they may not own it, they may not even trust it... and there might be conflicts. We encouraged them to learn and we have also learned in the process" (SEA Expert. Interview 2).

In a response concerning why the public should be meaningfully engaged in environmental assessments, an Environmental and Compliance official of NEMA pointed that when the public is

not carried along especially for urban land use developments, traditional knowledge is often times underrepresented which could create a well noticeable gap that might affect strategic decisions taken from an environmental scientist point of view.

> "You see, most of these communities have indigenous knowledge, ours is science-based. Their knowledge is very important when incorporated with science, which is regarded as their own input. For instance, their knowledge on animal behavior and migration can help environmentalists and proponents' judgments on road construction and animal corridors… Development doesn't only affect people; people also affect development…it's a two-way thing which should harmonize" (NEMA Official. Interview 11)

Some of the local respondents noted that participating has not only enabled them to speak out and raise concerns that are of utmost importance to them and their communities, it also facilitated a deeper understanding of their right to influence decisions that they are often excluded from.

> "To me … in any community plan or project strategy, we always advice it comes from the ground. We must not be absent in such discussions. [Proponents] have their plans and they must bring the plan into local participation because it is our right to know. Again, …whatever they say, we can look at what they are suggesting, then we can tell them and let them know that this [plan or project] cannot go that way in this place but can only go well the other way. We know … our community so well [therefore] what you would tell us is what our community would advise… Also, as a leader, it makes it easy to brief my people what we have discussed at the meetings…" (NIUPLAN Participant. Interview 13)

5.6 Public Participation Challenges Revealed in the Two Cases

Despite the recognized importance of public participation to the success of the NIUPLAN and KLIP SEA cases, notable challenges were encountered, and were described by the participating SEA consultants and participants as cumbersome process, lack of proper SEA education and awareness, capacity building prior to SEA, inadequate participants' access to information, the abstract nature of SEA in general, and finally, existing adversarial nature of gaining opinion during public participation process in Kenya. In terms of education, one of the

SEA consultants admitted that majority of the public, especially the host communities, are although aware of public involvement in developmental activities, most of them do not understand the meaning of SEA nor are they aware that they have individual right to influence decisions early enough in the SEA process. They are, therefore, unconvinced as to whether their inputs will be sincerely utilized.

> "We tried to make sure that everybody got the information, and we told them we are inviting them for SEA meeting. The first question that most of them asked was 'what is the meaning of SEA?' and 'will our opinion make any difference?'. So, we had to tell them we wanted to get their views so that the planning process for the city can be guided-which also reflected during our group presentations. In Nairobi, media coverage is very high, and about 99percent understand English and also watch the news. So, we seized the opportunity to provide more information on SEA through newspapers and posters" (SEA Consultant. Interview 4).

In addition, according to other SEA consultants, the public is often more involved in EIA projects, hence they are more familiar with decisions taken in the EIA context. However, since SEA is different and a new tool to most community members, the SEA team involved in the two study cases, incorporated SEA objectives into the masterplan descriptions and presentations for clarity and for quicker public response and input. This agrees with Heiland's (2005) argument in that the public are often more involved in EIA discussions that they are unable to influence, and are under-represented in SEA decision-making processes that they have higher chances of shaping.

Language barriers were another obstacle that impeded meaningful public engagement and resulted in inadequate communication of SEA information to the public. From the two reviewed SEA documents, most of the community members are poorly educated who understood basic English, but could only comprehend debates more effectively in Kiswahili. Some interviewed SEA consultants confirmed that there were translations of both the plan process and SEA through presentations during the meetings. As well, validation meetings in form of *barazas*, were mostly conducted in Kiswahili but for the most part, public input had less impact on the plan since the

documents were neither translated nor physically made available in local languages, hence, inaccessible to participants who could neither speak nor write English.

> "…we are not able to translate [the SEA Draft Report] in Swahili so we envisaged that they might have troubles reading the documents. Another problem is that you see, the illiterate ones don't even know how to use the internet. How will they be able to access the documents? Maybe that was why we did not get enough public comments despite intense advertorials. We have held the validation workshop in our local language [Kiswahili] to address the issues with the public and I believe their concerns have been addressed" (SEA Consultant, interview 5).

In terms of ambiguity, one of the participating government representatives pointed that the SEA process is often too theoretical in policy proposals, not only to the local community participants, but also to some educated stakeholders who participated (Interview 6). According to the official, SEA concepts are very technical and the overall process could be ironically inciting in that the same local group of participants who do not understand the abstract nature of the SEA process have the power to alter decisions taken at any stage of the process. In addition, one of the SEA consultants thinks local participants' needs are sometimes ambiguous and unending, and might affect the authenticity of strategic decisions taken. Rather, more educated stakeholders should be invited to participate since they are learned, and are able contribute more meaningfully.

> "…Like I said the local participants do not understand what SEA is, they are not able to provide some constructive strategic advice that we want. Most of them only want the government to meet their numerous needs. But when you involve the key [learned] stakeholders, especially the ones with the knowledge of existing masterplans, they will be able to integrate their ideas from the masterplans into the new one more effectively…
>
> …Still, [public input] was very much addressed and it also informed the masterplan in a great way. Although not all the inputs were addressed because we were looking at the best inputs to inform the plan, but most of the inputs were taken in good faith and were addressed" (SEA Consultant. Interview 4).

However, one of the enforcement and compliance staff of NEMA acknowledged the use of simple SEA terminologies in most of the NIUPLAN SEA meetings she attended, which she viewed to carry all participants along, yet effectively communicating the SEA objectives to the public.

> "In the meetings I participated, [the SEA Consultants] tried as much as possible to simplify [the SEA terms]. They did not come in to present jargon because you know we like to do that a lot in NEMA [laughs], we could say SEA is 'iterative' or 'integrated' [with emphasis and laughter]. But they presented and described the SEA process in simple terms so that the people could understand" (NEMA Official. Interview 1).

Lastly, the adversarial nature of seeking public contributions in government-associated developmental plans and projects was identified in the KLIP SEA as a major obstacle in achieving meaningful public participation. According to some of the participating stakeholders, this is because the KLIP SEA, or in this case, the 'Leather City' is already viewed by the public as controversial owing to the existing sewerage treatment plant that has been constituting nuisance to the host community for years, and has not been properly managed by the proponent, who coincidentally is proposing the new Leather City in the same community. In an interview response, one of the KLIP SEA consultants opined that politics often time affect project achievability in Kenya. Therefore, in projects like this, NEMA should be neutral by deciding which participants should be invited to such SEA meetings rather having the general public 'scrutinize' the project.

> "Public participation is a very precarious process in Kenya because it opens up the project to scrutiny by diverse stakeholders some of whom may be opposed to the project for no reasons…probably because of politics or because they are NGO groups fighting for the rights of community members. In that wise, I will recommend that everybody be informed and sensitized and let NEMA take the ultimate decision about the environment that will favor the greatest public good" (SEA Consultant. Interview 5).

> "NEMA is doing a good job I must say because they get everyone to be informed and yet they take strict independent decisions and that is exactly how it is supposed to be, rather than giving voice to some individuals who come to the SEA meetings with the intention of opposing, disruption of meetings and disagree with every point we raise with no cogent reason. Kenya is highly polarized in terms of politics. There are people who oppose every project, good or bad, because it is associated with the opponent. These are the disparities that needs to be addressed and that was why I mentioned that NEMA should at a point,

take up the best decision as to whether to proceed with the project or not. (SEA Consultant. Interview 10).

This process of gaining public input in proposed developments like the KLIP SEA was also identified in the literature as a major challenge of Kenyan public participation in EA where public spokesmen and lobby groups used such politicization as opportunities to appeal against the proponents on environmental, sustainability and social injustices (Okello et al., 2009; Kameri-Mbote, 2000). However, since the main objective of public participation is to avail the public an opportunity to examine and shape PPP outcomes and final decisions, I suggest NEMA should be less intrusive in deciding who should participate or scrutinize a project that might affect the same set of people. Moreover, Molenaers and Renard (2006) argued that if this type of barrier is not adequately addressed, it may not only lead to 'participation fatigue', but could also lead to bad policy choices that could steer probable loggerheads of mistrust between PPP proponents and public representatives.

5.7 Evaluation of Public Participation in the Two SEA Cases Using the Operational Indicators of Meaningful Public Participation

5.7.1 Participation Process in NIUPLAN SEA

In the NIUPLAN SEA, public consultations were held throughout the entire plan area, that is, Nairobi City County consisting 9 sub-counties (Figure 5) and extended counties outside the city boundary known as the Greater Nairobi (NIUPLAN, 2013). Reports from the Volume 2 of the Public Engagement and Disclosure Plan (PEDP) of the NIUPLAN SEA indicated that consultations including *barazas* were held for the general public and other stakeholders in 3 major campaigns which include disclosure meetings, detailed SEA study, and validation workshops. Each of the campaigns took place in all 9 sub-counties including Westlands, Dagoretti, Makadara,

Njiru, Embakassi, Langata, Kasarani, Starehe, and Kamukunji. In addition, secondary meetings in the form of focus group discussions (FGDs) and interviews were held separately for government agencies, NEMA County officers, local and international NGOs, private investors, Heads of Districts and external stakeholders to draw information pertinent to the proposed integrated multi-sectoral infrastructures. Although some FGD meetings were reportedly cancelled owing to low turnout of participants, however, with about approximately 700 participants in attendance, a total of 15 FDGs and 23 consultative fora (including *barazas*) were held during the NIUPLAN SEA, representing each constituency in Nairobi. A compiled list of attendance and minutes of meetings and FGDs can be accessed from **http://citymasterplan.nairobi.go.ke/**.

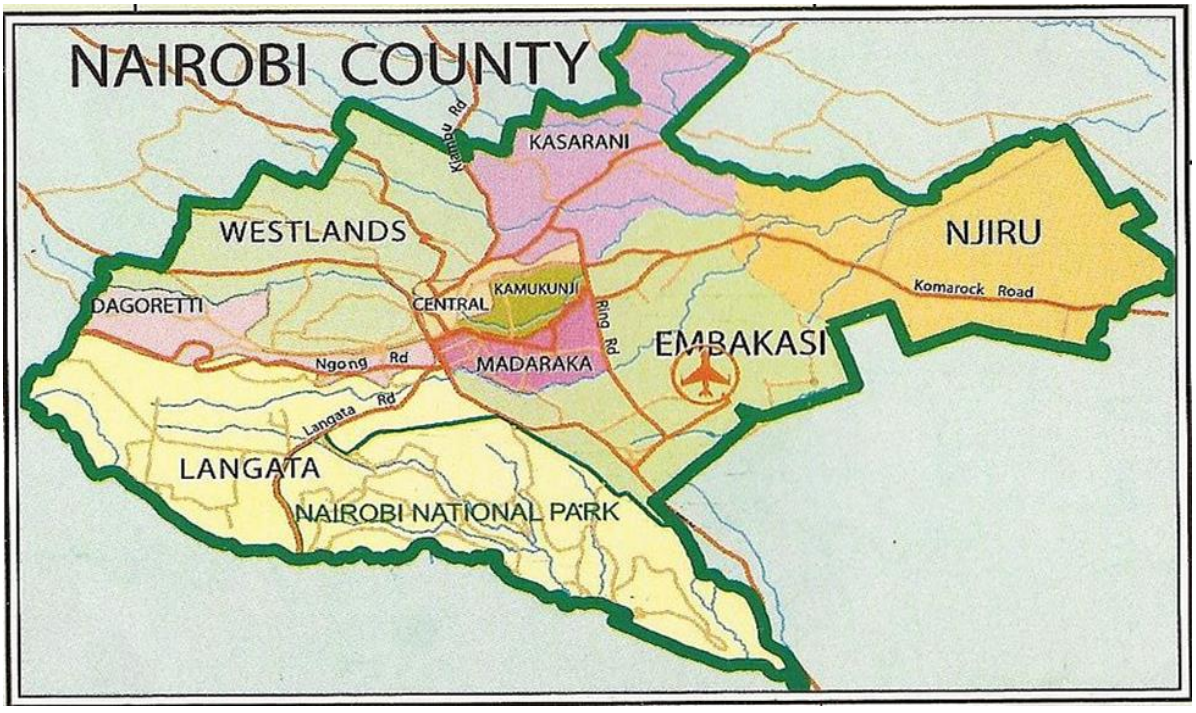

Figure 5: Proposed Location of the NIUPLAN SEA (Source: mapsoftheworld.com)

The PEDP, as well interview responses of some SEA consultants in charge of the NIUPLAN SEA meetings, and through collation of minutes, revealed that more than half of all 23

consultative meetings were held in local communities affected by lack of, or inadequate access to appropriate infrastructure. The first stage of consultations, that is, disclosure campaign was held to inquire and seek more informed views and comments about the masterplan developed by the Nairobi CCG. While constant SEA updates were organized for participants during the detailed SEA study, the third stage of consultation addressed questions and comments raised by the public, as well as to provide feedback on those issues (NIUPLAN, 2013). Owing to the extensive nature of the plan coverage, and to maintain focus in this research, a smaller sample size was developed with more attention paid to the communities mostly affected by waste management issues. The local participants eventually recruited for this case study research were selected from Dandora, Kawangware, Dagoretti South, Kangemi, Korogocho communities, as well as from the famous Kibera slum. Consequently, specific questions related to the NIUPLAN SEA in terms of how they were involved, what issues were raised, if their concerns were addressed and what was learned as part of their involvement will be addressed below in detail in section 5.8 in detail.

5.7.2 The Role of Kinanie Community in the KLIP SEA Participation Process

With a population of about 1.1 million across over 250,000 houses, and covering over 6000 Km^2, Machakos County is made up of 8 sub-counties including Machakos, Kangundo, Matungulu, Kathiani, Yatta, Masinga, Athi River and Mwala (EPZA, 2015; NEMA, 2012). These sub-counties are further sub-grouped into constituencies, locations and sub-locations with the KLIP PPP location area of Kinanie community falling under the Athi River sub county. According to the KLIP SEA document, Kinanie community on one end, used to be an open savannah grassland which gradually became a large piece of *Eucalyptus* woodland plantation and on the other end, Kinanie consists of a developing household community comprising about 150,000 persons over 200 km^2 landed area (EPZA, 2015). Owing to the low population structure of Kinanie, only a few

health, religious and educational amenities are available to support existing inhabitants. The main source of livelihood, which also doubles as the most common means of employment is local pastoralism augmented with subsistence agriculture and commercial horticulture.

In terms of utilities, in addition to the existing sewer infrastructure on site, there are few steady sources of potable water and power supply, but in terms of economic and social well-being, more than 50% of the people living in Kinanie and Machakos generally live below poverty levels of 45% national average (EPZA, 2015). This, in addition to low level of employment has contributed to crime rates in the county, hence, the need for new development infrastructures that can boost economic and social growth. Owing to relatively small size of Kinanie community PPP area, public consultations and *barazas* for the KLIP SEA were specifically held within Kinanie, but a few other residents were invited from neighboring Kitengela and Athi River communities. While 66 stakeholders were consulted during the disclosure stage of the SEA study, a total of 170 other participants attended the 38 consultative meetings held during the detailed SEA study and validation exercises giving an overall total of 236 stakeholders that participated in KLIP SEA process (Table 9). Deliberations as part of public involvement, as well as participants' learning outcomes are equally explored in detail below.

5.7.3 Participation Among CBOs Through SEA and SWM

Since the 1980s, Nairobi started experiencing deteriorating waste management and disposal options, leading to the growth of many private and individual waste companies (JICA, 2013). These private waste collectors, including CBOs, NGOs, youth and self-help groups organize themselves around various waste management activities particularly employing an integrated approach to collection, recycling and composting of waste generated from households (Rotich et al., 2006; Henry et al., 2006; JICA, 2013). Till date, the number of private collectors

has continuously risen with a total of over 200 CBOs and youth groups registered by the Nairobi City County engage in assisting with household waste collection and management. More than 100 CBOs and local NGOs were invited to participate in the NIUPLAN SEA, each asked to contribute by sharing their role as an organization in SWM in order that they may have helped to shape the new Nairobi masterplan. Given the important roles these organizations are playing in SWM in Nairobi, I felt it important to document and share their views.

A total of 12 CBOs that participated in the SEAs (11 from NIUPLAN case and 1 from KLIP SEA) including self-help groups and local NGO representatives (Table 11) were involved in this research, each describing how they were involved in SWM, what issues they deliberated upon, and whether joining a CBO has changed their personal views about SEA and SWM in general. From Table 11 below, the CBOs are categorized into waste-based or self-help groups or both. This is owing to the combined objectives of some of the groups who, for instance, are waste focused but also carry out other activities unrelated to waste e.g., advocacy, and general community awareness campaigns. In addition, although these groups are independently registered with the NCC, they have a central body that governs the general activities of all the CBOs in Nairobi, some of who also participated in this research.

Table 11: List of Participating Community-Based Waste and Self-Help Groups

S/N	Name of Participating CBOs and Acronym	Category of CBO
1.	Dandora Transformation League managed in the Mustard Seed Court (DTL)	Waste-based
2.	Kibera Recycling Group (KRG)	Waste-based
3.	Jericho Tree-Planting managed by Bamboo El-Ohe Group (BEG)	Self-help
4.	Dagoretti Refuse Collecting Group (DRC)	Waste-based
5.	Kawangware Community Organization (KCO)	Waste-based and Self-help

6.	Nairobi Slaughterhouse Biogas Facility managed by Nyongora Community Group (NCG)	Waste-based
7.	Kibera Biogas Facility managed by Mdaani Community Group (MCG)	Waste-based and Self-help
8.	Makadara Composting and Recycling Plant (MCR)	Individually Owned Waste-based
9.	Maringo Composting (MC)	Individually Owned Waste-based
10.	Little Bees International NGO managed by Korogocho Smart Women Group (KSW)	Waste-based and Self-help
11.	Ocean-Sole Recycling NGO (OSR)	Individually Owned Waste-based and Self-help
12.	Kungagata, Women Group, Kinanie (KWG)	Waste-based and Self-help

When asked about how they function as CBOs, the leaders of Kibera, Dandora, and Dagoretti CBOs responded that their main purpose of coming together as a group was to become more aware of the waste challenges presently facing Nairobi, to be more involved in the management, and more importantly, to design ways that useful resources can be harnessed from waste materials.

> "This group was formed because of the present situation of Dandora community. Now, as you have heard, Dandora houses the largest dumpsite in Nairobi. It is one of the dirtiest estates, now a slum… What we do is to transform mindsets of community members…It is generally advised that every community should make use of whatever resources they have for the development of such community… we came up with this initiative such that waste is no longer seen as a waste but rather a useful resource…" (Leader, Dandora CBO. Interview 1).

> "…This group is about 8 years' old. We encourage one another by teaching ourselves about the environment where we live…I mean how to keep our environment clean, instead of depending on the government, we ourselves have come up with many initiatives on how to manage our waste and our environment in general" (Leader, Kibera CBO. Interview 2).

> "… Our group is under the Dagoretti Refuse Collectors Group. We have been operating for more than 6 years. What we do is majorly garbage collection…that is our core vision. We also sort plastics and metals and sell to industries as raw materials. We also engage in tree

> planting activities where we buy and sell nurseries of seedlings and plant trees in seasons. We as the group officials came together to decide on other ways of protecting the environment. We engage our members to plant trees not only to beautify our community here but also to appreciate nature better" (Leader, Dagoretti CBO. Interview 3).

Other CBO group members interviewed gave mission and vision statements that are very similar to the documented responses above. As well, they presented how they intend to ensure that their intentions are made manifest in the NIUPLAN SEA, as well as in other developmental initiatives organized by the Nairobi City County. Of the 11 CBOs that participated in the NIUPLAN SEA meetings, 6 fully remembered what issues were discussed during the meetings. When asked what ideas were brought into the SEA meetings, the Korogocho, Kawangware, Makadara, Kibera and Dagoretti CBO groups responded that they had suggested the integrated approach to waste handling so that less waste eventually ends up at the Dandora dumpsite.

> "…Collection, sorting, recycling, reuse methods of waste management were what we proposed at the meetings. I believe they will be implemented but the problem with the county government is implementation. We have submitted our views in the past but when it gets to the office they change the whole concept. So, unless we have an environmental conscious leader in the government, it might remain a huge implementation challenge to the county government…" (Leader, Dagoretti CBO. Interview 3).

> "We participated twice in the Nairobi meetings and we mentioned all these issues [SWM issues]to them. There are fewer transfer stations in Kawanagware community for instance and the collection bins get filled in time. We told them to get us more transfer stations and bigger collection points so that it becomes very easy for the truck to pick it up for eventual disposal. The county government promised to work on our requests but we haven't heard from them till date" (Leader, Kawangware CBO. Interview 13).

> "I suggested in the meeting that if Dandora can be cleaned up, there will be more room for developments. More factories, schools, health centers and other infrastructures, even the value of estate will appreciate more than what it is right now" (Leader, Dandora CBO. Interview 1).

Other participating CBOs pointed that they had raised issues regarding inadequate transportation systems, health risks associated with open dumpsites, and increased fees for

dumping waste at dumpsites during the public consultation meetings. However, they are still awaiting prompt response from the government regarding the issues they raised in the meetings.

5.8 Assessing Public Participation Processes of the Two SEA Cases

The ideal conditions, highlighted by Mezirow (2000), have been delineated by many scholars especially those within the EA and public participation literature as an operational tool for identifying meaningful public engagement in EA processes (e.g. Sinclair and Diduck, 2001; Diduck, 1999; Fitzpatrick and Sinclair, 2003). Others have applied the ideal conditions to learning in resource management and EA within the developing countries context such as Kenya (e.g. Walker et al, 2014; Spaling et al, 2011; Sinclair et al, 2011). Likewise, in this study, the ideal conditions are presented and described as operational indicators of how meaningful the public involvement process was in the two selected cases.

Table 12: Assessing Public Participation using the Operational Indicators of Meaningful Participation (Adapted from Mezirow, 2000; Sinclair and Diduck, 2001; Walker et al, 2014)

Learning Criteria	**Operational definitions/Indicators**
Accurate and complete information	Are the public equipped with sufficient information about SEA, its meaning and purpose? Is the public adequately notified? Does the public have access to SEA reports? Are the documents written in simple and comprehendible languages?
Freedom from Coercion	Does the participation process create an enabling environment for freedom of expression of thoughts?
Openness to alternative perspectives	Does the process address need, purpose, and alternatives? Is the SEA public participation in harmony with the planning process? Is the process iterative and open to continual adjustments?

Ability to reflect critically upon presuppositions	Is the public provided with the SEA outcomes? Is the public shown how their input is used in the decision-making process? Does the process create opportunities for public to participate next time?
Equal opportunity to participate in any form of discourse	Are there opportunities to participate in the entire SEA process? Are the most affected persons invited to participate? Do opportunities exist for active participation? Are there financial support mechanisms for participants' involvement?
Ability to assess arguments systematically and accept a rational consensus as valid	Does the process provide adequate systems and methods to evaluate participants' performance for improvements and compromise? Does transparency exist in decision-making processes? Does the SEA and participation process incorporate public input that supports decision-making?

5.8.1 Accurate and Complete Information

According to Sinclair and Diduck (2001), past research has revealed the importance of complete access to accurate information for meaningful public participation and learning through EA, resolution of conflicts, and sustainable environmental resource use. The operational definitions outlined in Table 12 above provide the indicators elucidated within the context of the research area, that is, Kenya. It was also important to add an additional indicator 'Are the documents written in simple and comprehendible languages?' to the assessment conditions in Table 12 above since majority of the participants indicated they likely could better digest information provided them in their local *Kiswahili* language even though they understood English. This is further described in section 5.8.1.3.

5.8.1.1 Is the public equipped with sufficient information about SEA, its meaning and purpose?

The interview responses from most of the community participants in NIUPLAN SEA revealed varying levels of dissatisfaction with the way information about the meetings was communicated to them. For some, the news came through the community chiefs, and neighbors who had little knowledge about the plan process. For the contented participants, their head chiefs had called for a *baraza* prior the SEA meetings to debrief some of issues to be discussed, in the form of a 'Q and A' session. When asked if they were provided with enough information on the meaning and purpose of SEA, and importance of involvement, most of the participants interviewed admitted that although they were not provided with enough, or any, information prior the meetings but what was provided at the meetings sufficed from their perspective. For instance, 2 NIUPLAN participants mentioned that although they had no prior knowledge about the meetings, they had participated to contribute to resource use and allocation in their communities, to improve the lives of their community members, and to conserve, manage or protect their environment especially from existing solid and liquid waste problems.

> "The purpose of the meeting was to discuss how we can make Nairobi a better city for everyone. Nairobi is growing fast which has made things a bit difficult. The waste management, sewer lines, houses and roads have worsened. We were called for the meeting to discuss how the challenges can be addressed" (NIUPLAN participant. Interview 10).

> "For me, am very much interested …because we have a river which goes through our areas, I mean we have several streets. And you find that due to overpopulation and encroachment these rivers are overused, and in like 2 or 3 years' time those sources of water are not going to be there anymore. Although little information was provided before the meetings but I participated because I want us to protect those rivers and catchment areas" (NIUPLAN participant. Interview 6).

> "Athi river basin is the only river basin where [the SEA Proponents] can get water to run the tanneries and which happens to be the river which the community depend on… the river is getting dried. When the river dries up animals that depend on them or farmers who grow their vegetables will not be able to grow them anymore. So, I participated because they

needed to tell us how much water quantity they intend to use and where it will come from" (KLIP participant. Interview 7).

Most of the KLIP participants interviewed could not remember if the term SEA was specifically used during the meetings but they understood the whole concept of the KLIP masterplan as having probable social and environmental impacts on their community. In addition, most of the Kinanie respondents expressed disappointment in the inaccuracy of information given to them prior the meetings because not only was information insufficient, the SEA consultants laid more emphasis on the potential socio-economic benefits in the meeting, than the negative aspect of the plan. The participants wished they had gotten enough information on SEA before the meeting to enable them to ask more EA specific questions, especially solid and liquid wastes aspects of the leather city in relation to existing sewerage issues already faced by the community, and what measures are in place for proper management.

"They told us there in the meeting. All issues to be discussed were disclosed on the same day of meeting"

"It wasn't okay by me because if I knew in time the type of issues to be discussed, I would have been more prepared to ask specific water and waste questions related to the leather city, and especially since there is already an existing sewer problem that have not been resolved"

"Imagine this, before the meeting we were told we shall be given seeds to plant. Why do they have to tell us about seeds? What has seeds got to do with the leather city?"

"I was initially confused when they mentioned seeds but later I got to understand what the meeting was all about. I was more interested in the long-term implications to our community than the benefits of the plan"

"I understood it was an assessment of a proposed project which is what the community had always wanted. Why should information on such projects be hidden until the day of meeting?" (Kinanie FGD Participants)

In both SEA reports, it was acknowledged that responses from the local community participants were used to develop environmental baseline data, impact prediction and mitigation techniques, identification of alternatives and development of the Environmental Monitoring Plan.

However, while most of the participants mentioned they had general knowledge of the masterplans, only few admitted hearing 'SEA' for the second time during the meetings. More interestingly, while few others acknowledged been a bit familiar with the term 'EA', information received at the meetings was accepted as valuable as they developed deeper understanding of SEA purpose as a means of developing more strategic measures for sustainable development of masterplans like NIUPLAN and KILIP.

> "…In my opinion, the purpose of that meeting was to develop a new masterplan for the city of Nairobi. Nairobi has grown so large that the old masterplan doesn't work anymore. So, I think they brought the plan forward to discuss with us the strategies…especially environmental, land, water and waste issues and how we can decide early on the best steps to achieve greener environment especially for the future of Nairobi" (NIUPLAN participant. Interview 5).

> "…The purpose [of the SEA meeting] was to find broad facts about the projects [EA] to be developed… As communities, we need to understand how this program affects us in a general sense of the environment where we live. For example, how will our water levels be affected? What water demand will be required by one tannery per day? They proposed 36 tanneries which will be water-intensive, so if you design a project like this you should have an idea of how much water will be needed and how you intend to supply without impacting existing water levels" (KLIP participant. Interview 7)

> "I think Environmental Assessment refers to, for example when you want to put a petrol station in my area, as a community member I want to understand whether the fume from the petrol, or in case there is fire, whether it's going to affect the people nearby… and what measures they have taken to ensure that they have protected the residence of that area from those fires or fumes. I think there is lead in petrol and it is going to be [washed into] our small streams …in our small drainage system. What measures have they taken to ensure it is not going to affect us now and in the future?" (NIUPLAN participant. Interview 6).

Overall, as captured by more than half of the local community interview responses, information was slightly inadequate but not completely insufficient as the participants developed a good sense of the SEA meaning during the meetings. Nonetheless, most of the participants would have loved to be properly and accurately informed and educated on SEA in relation to the proposed

developmental masterplans prior to attending the meetings, not only to ensure transparency in plan options, but also to make them feel included in decisions that most likely would impact them, positively or negatively.

5.8.1.2 Did the public get adequate notice?

The PEDP of the NIUPLAN SEA case revealed that at least 2 weeks' notice was given in participants' communities in form of posters, letters, newspapers, radio and television advertorials. As well, interview responses from one of the NEMA representatives and a SEA practitioner showed that although notice was not a 100 percent adequate, participants were all encouraged to participate.

> "…They did a lot of advertisements and newspaper publications, emails, posters radio and television announcements. Now, I am not sure how much time was given, whether it was enough or not. I may not really confirm it but generally they did a lot. They even had a website where update of meetings was announced and documents uploaded for public use. There might have been challenges of protocols and announcing meetings a day or 2 days before the meeting…I may not confirm that but they really tried their best to advertise as much as they could" (NEMA Official. Interview 1).

> "Yes…the timing was about two weeks' notice. There was also a follow-up. Although I won't say it was perfectly well done in terms of giving notice, but I if I was to rate it we would have a 70percent… not 100. But remember that we had a limited timeframe…we were not given a lot of time" (NIUPLAN SEA Consultant. Interview 2).

> " …A week to two weeks' notice was given. Although some of the members complained about being informed on the day of validation meeting, but participants were duly notified in all other meetings" (KLIP SEA Consultant. Interview 10).

Nonetheless, the interview responses from local community participants depicted mixed levels of satisfaction. Only a few KLIP and NIUPLAN participants agreed that they got about one-two weeks' notice, which seemed enough for them to be well prepared for the meeting.

> *"How much notice did you get before the meetings? Was this enough notice?"*

> "We got just one-week notice… and that seemed ok to me"

> "I was informed by my friend a week before the meeting and I believe the notice was enough for me".

> "Normally they should have given us 30 days' notice to get very prepared but the little time I had was just enough for me to attend the *baraza"* (KLIP FGD Participants)

> "I got informed through the community administration offices, they contact people between the community and the government. I got about six days notice and I would say yes it was enough for me" (NIUPLAN participant. Interview 4).
> "It was five days for me. if they gave a longer number of days I might forget or engage myself in other commitments. So, I would say five days was enough" (NIUPLAN participant. Interview 3).

Most of the participants said they got very short notice and they were not very pleased because, according to them, many potential community members and leaders could not make it to the meetings. Moreover, since the purpose of inviting the public in the first instance was to strengthen the strategic decisions taken in the planning process, one NIUPLAN participant stressed that giving short notice not only limited the opportunities for key community representatives to participate, but leads one to question the credibility of public participation outcomes of such meetings.

> "…It was for three days before the meeting. This was not enough notice. At least we should be told 10 days before the meeting. It was because the news came from the DO and I had to honor him, that was why I went. I wouldn't have gone! (NIUPLAN participant. Interview 1).
> "We got an unofficial form of notice from the manager of our volunteer organization the same day the meeting was to be held. That was too late for a notice! [The manager] begged us to join the meeting. We were not even ready. Other key waste groups and stakeholders that were supposed to attend the meeting and that would have had the opportunity to make helpful suggestions on waste management and other environmental issues were missing. How do we trust the outcomes of such meetings?" (NIUPLAN participant. Interview 5).

> "The notice was very short. The longest was probably a week… At least 10-20 days would have been enough because people are busy and that explained why people didn't attend the validation exercise because we knew about it that morning… When people are busy and [the Proponents] call for meetings without giving sufficient notice, participants miss the meetings. So, proponents carry on with the concepts and projects because nobody is challenging it" (KLIP participant. Interview 7).

This lack of notice was evident in the case of KLIP SEA validation meeting which I attended. While there was a massive turnout of government stakeholders and proponent representatives, only one Kinanie community resident was in attendance which happened because of he had a "less-busy" schedule (KLIP participant. Interview 8). Overall, in as much as some felt they got three-six days' notice which seemed adequate to them, a good number of participants in both SEA cases would have preferred at least 10-14 days' notice to get them all properly prepared for the meetings.

5.8.1.3 Do the public have access to SEA documents? Are they written in understandable languages?

The draft SEA reports submitted to NEMA showed that resulting comments from each stage of the SEA and public participation processes were uploaded on the internet and poster copies disseminated to the participating communities. However, most the participants were not able to access the documents; hence they are not certain as to whether their inputs were addressed or utilized. In their interview responses, the SEA experts in charge of public participation and collation of NIUPLAN SEA reports pointed that majority of the public feedback meetings were held in Kiswahili and were translated before publishing in local newsletters (NIUPLAN SEA Consultants. Interviews 2 and 4).

However, most of the local participants indicated they did not have access to the SEA information. Many also noted that only a few of them could read or write English. The learned participants who tried to access the internet complained that the file memory was not only too large to download, but also the terminology used were not comprehensible, and suggested that a summary of the report written in Kiswahili or an understandable format should have been uploaded. When asked if they have been able to access the SEA reports, two physically challenged participants interviewed indicated that one of their blind colleagues had no idea what was written

in the SEA documents, and suggested the reports should have been transcribed in braille for the visually impaired participants to follow up.

> "Yes, I saw the final document …. Some members didn't even see the document. I am well informed about the internet that was why I got to see the document. How many people can access the internet let alone the masterplan? The plan has got 700 pages. That is a novel, right? How can an ordinary man read a 700-page document when he or she is not well fed? That is unrealistic! (NIUPLAN participant. Interview 5).

> *"What do you think could have been done to better inform the public?"*

> "Firstly, they should have a simplified 10 to 15-page [alternative SEA] document. Secondly, the document should have been translated to Kiswahili for the less educated ones to understand. The document was not also written in braille for our visually impaired colleagues to follow up as well. How can we have a masterplan for a city like Nairobi and both the able-bodied and physically challenged do not have complete access? (NIUPLAN participant. Interview 11).

As described earlier, one of the challenges of participation recognised by some of the SEA consultants was inaccessibility of documents to participants due to logistics reasons and language barriers. However, responses from the consultants revealed that follow-up meetings would be conducted in local languages during the SEA implementation phase, to ensure transparency and more meaningful deliberative public participation process. Nonetheless, at the time I was still in the field, nothing much had been done regarding follow-up of participants with little access to the SEA minutes and reports.

5.8.2 Freedom from Coercion

5.8.2.1 Does the participation process create an enabling environment for freedom of expression of thoughts?

Community participants interviewed from the two case studies expressed utmost satisfaction in their freedom to express their views. Although there were many who wished to ask questions, two participants mentioned that facilitators could not accommodate the questions from all the participants due to time limitations, but that the meetings were well coordinated to

accommodate questions from every group including the women, the physically challenged and the youth representatives.

> "Everyone was allowed to contribute…including we women"
> "There was no imbalance in contributions"
> "As a youth, I was allowed to ask questions"
> "Some of the rich [residents] were there but that never stopped us from giving our opinions" *(KLIP FGD Participants)*

> "Everyone was allowed to ask questions in a controlled way…but there was freedom to ask questions. It was fair"
> "Everyone who wanted to talk was given a chance to ask question…no one was afraid to speak out because I think it was a gathering that would eventually affect us, good or bad" *(NIUPLAN FGD Participants)*
> "I would say not everybody could ask questions because many people attended, and participation depends on somebody's understanding. You may ask a question that nobody understands so it depends on the people's intelligence …but majority are given chances to ask" (NIUPLAN participant. Interview 4).

One participant who was not able to ask questions claimed he came in late during one of the meetings and that all questions were already answered, aside that, majority of the interviewed participants thought there was fairness in expression of views, and that there were no boundaries throughout the entire meeting process.

5.8.3 Openness to Alternative Perspectives

5.8.3.1 Does the process address need, purpose, and alternatives?

Often, EA proponents are reluctant to accept the need for an in-depth evaluation of PPP alternatives in relation to how they can be more open to their conflicting perspectives (Sinclair and Diduck, 2001; Fischer, 2007). According to the Kenyan National SEA guidelines as well as international procedures, all PPPs must be addressed and subjected to evaluation of alternatives in all stages of SEA study, and in the planning context must incorporate sectoral developmental directives (Dalal-Clayton and Sadler, 2005; Therivel, 2010; NEMA, 2012). As described in the SEA reports, as well as in Chapter 4, both SEA case studies explored PPP needs, purpose and

alternatives through public participation, but the timing of the participation did not seem early enough in the planning process to affect alternatives thus limiting the opportunities for the public to partake in decision-making processes of the plans.

5.8.3.2 Is the SEA public participation in harmony with the planning process? Is the process iterative and open to continual adjustments?

As pointed out in the EA and SEA literature (Fischer, 2007; Dalal-Clayton and Sadler, 2005; Therivel, 2010; Sinclair and Diduck, 2001), for an SEA to be effective, not only must it involve rigorous public engagement, but also must be iterative, timely, integrated and open to continuous improvements. Moreover, Sinclair and Diduck (2001) stressed that when the public is involved at the earliest normative phase of a plan process, the public is more likely to shape core decisions relating to the PPP needs and alternatives which could save time and resources. Again, the NIUPLAN and KLIP draft SEA reports revealed that public consultations held during the scoping stage of the SEA provided more insight into what should be done, while consultations held during the detailed phase of the SEA study described the PPPs in detail in relation to what alternatives were selected and how they would be implemented (NEMA, 2012; Sinclair and Diduck, 2001).

> "…You know SEA was used initially for public and stakeholder consultations, so we involved them during the first [scoping] phase…after the feasibility/scoping studies we started involving more of the public, even through to the final validation stage. So, I think we started early and the timing was early enough…" (Socio-Economist/SEA consultant. Interview 4).

> "…In fact, the first meeting, which was the disclosure meeting, was conducted majorly to inform the public of our intentions. We took time to explain every aspect of the proposed development in order to keep the public aware of the likely resources that will be utilized as well as the benefits the community members stand to gain…30 days later, we had another meeting after much public consultations and deliberations known as the validation meeting, to give a recap on the alternative choices chosen for the proposed development…" (KLIP Proponent. Interview 6).

In terms of timely initiation of the SEA process, there were mixed arguments from SEA experts interviewed in both cases. While three NIUPLAN SEA consultants noted that public participation came in late in the planning process, two KLIP SEA consultants argued that in Kenya, SEA is often conducted after PPPs are initiated (Figure 5). According to the KLIP SEA experts, this is done in accordance with one of the National SEA Guidelines which states that all 'proposed' PPPs that have the potential to pose significant environmental impacts must be subjected to SEA (NEMA, 2012). Therefore, 'proposed' PPPs such as NIUPLAN and KLIP masterplans were initially developed by planners to establish what infrastructures was needed e.g., roads, waste facilities, water system, power infrastructure, etc., and then subjected to the SEA process to evaluate and select best alternatives for each infrastructure through public participation. The selected alternatives are further subjected to EIA before final implementation (Figure 6). The plan initiation process, according to most of the SEA experts, is onerous and too complicated to be discussed with the public, and that only the SEA process should be conducted with the public to welcome broad alternatives which best suite individual proposed infrastructure that will meet the environmental and socio-economic needs of the public.

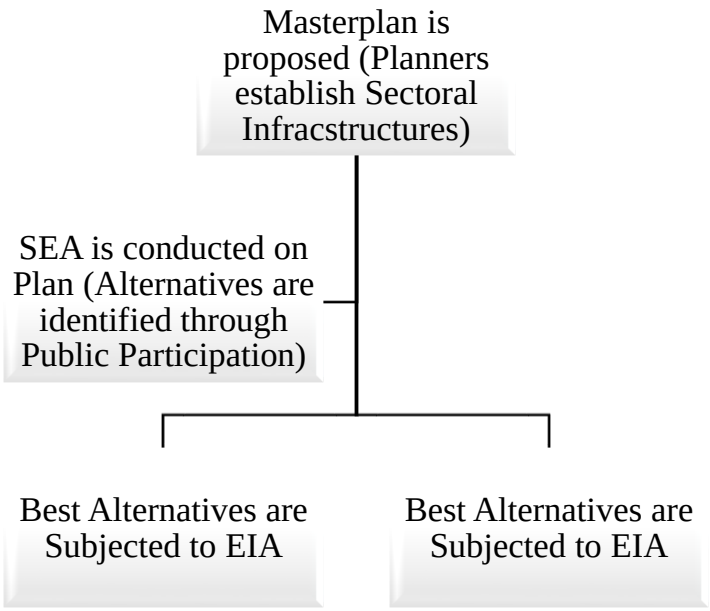

Figure 5: Masterplan and SEA Integration within the Kenyan Context

> "Although there were certain situations that wasn't quite easy for us. We had to put our foot down that the plan has to change…there was a big gap and conflict between us and the planners. They had already done their plan and by the time we the environment and social team came up with our findings, we thought some alternatives had to go especially in certain areas…we had to come up with recommendations that better informed the plan" (NIUPLAN SEA consultant. Interview 2).

> "The masterplan for the KLIP was established by the city planners and done to determine the need for an SEA for this particular development, especially since it has been determined that the plan will have significant environmental impacts. I think this is how it is, and should been done" (KLIP Proponent. Interview 6).

> "The masterplan was drafted first and then subjected to SEA. The SEA was used to develop best alternatives and to adjust processes in the masterplan. It informed us on areas of concern to be looked into before implementation of the plan… The best alternatives selected in SEA will be evaluated in detail during EIA. The timing was right because we started SEA process…just immediately the masterplan was ready, so I would say they went almost after each other" (KLIP SEA consultant. Interview 10).

However, information gathered from most of the NIUPLAN and KLIP local community participants showed that they were not happy that the core elements of the masterplans were

already drafted before inviting them to participate, and so the meeting felt like the proponents and consultants already had answers but were following due process to satisfy the funding agencies, or what they often time referred to as 'fulfilling the public participation formality'.

> "No one told me the importance but I found that they organized the participation for the validation reports or to show the funders that residents were represented. They wanted to show off in the reports that they had fulfill all righteousness of 'public participation' when in reality it isn't so. To me that validation meeting was not valid! How do you call for validation when the people who are most concerned are not there? …What is valid about such meeting? (KLIP participant. Interview 8)

> *"What are your reactions to the public participation process more generally?" (NIUPLAN FGD Participants)*
> "The organizers of the meeting didn't hear our opinions. They didn't ask us questions, they called for the meeting only to deliver what they already had in mind. We were being lectured"
> "We know that in urban planning, strategic objectives and decisions are to be taken. I agree with him…the problem here was that the masterplan was already drafted and decisions have already been taken before inviting us to participate"
> "You see; they were supposed to ask us specific questions related to the issues on the plan. They didn't seek our input, rather they came to the meeting to fulfil the formalities of public invitations"
> "We felt we were not carried along. We thought they already concluded before coming. We would have loved to be part of those who initiated the plan in the first instance…at least in our own little way and since this is our community in question. They came to us to seek our endorsement on that plan…it was just to fulfil the constitution which says there must be public participation for any project in the country. It wasn't thoroughly done the right way".

Obviously, public participation was integrated late into the planning process which greatly limited the public's ability to come up with strategic alternatives for the plans, flawing its conformity with SEA best practice. One KLIP community participant thought that although the plan was drafted before inviting them to participate, their responses might still have some influence on the overall KLIP plan process and outcomes especially regarding economic benefits and waste management issues. Again, many of the KLIP participants were not overly excited about the process as partly evidenced by the lack of participation in the validation exercise.

5.8.4 Ability to Reflect Critically Upon Presuppositions

Another important learning condition that can boost participant learning is the ability to reflect critically on presuppositions. This section explores whether SEA outcomes and feedbacks were provided to the participants, and if participants had opportunities to influence decisions taken on the SEA cases. Aside being able to influence decisions, the indicators of this condition are also described to determine if participant reflected on their values and beliefs, and assessed meanings and truthfulness of ideas being communicated to them (Mezirow, 2000; Sinclair and Diduck, 2001).

5.8.4.1 Was the public provided with the SEA outcomes? Was the public shown how their input was used in the decision-making process?

When asked if there were follow-up meetings and sharing of results from the SEA consultation process, the interview responses showed that most participants expressed dissatisfaction about not getting feedbacks from the meetings they attended. Participants involved in the NIUPLAN consultations especially from Dandora, Kibera, and Kawangware communities, pointed out that since their communities are the most affected by waste management issues, they would have loved to know if their concerns were truly addressed in the SEA, and if their input influenced the decisions taken about their community waste issues in the masterplan. In their responses, three community participants suggested that since the facilitators requested their phone numbers for SEA attendance register, it would have been fair to send them text messages or links on where and how to access the documents.

> "They haven't come back. This is a major problem in Kenya. When it seems like they have started well, they no longer care to update the public on outcomes. We are still waiting" (NIUPLAN participant. Interview 10).

> "No. We haven't gotten any response. I heard that some of the documents are on the internet but how do I access the internet here in Kawangware? I don't know anything about the internet. We left our phone numbers with them, why didn't they call us? Or summarize the document in Swahili so that we can understand better?" (NIUPLAN participant. Interview 9).

> "No feedbacks, even till date! If they wanted to get my feedback, you as the researcher got me on the telephone, right? They could have called or send me a SMS and told me 'click this link and you would find the feedback', very simple! Or they could have sent a message and say 'click that link, you participated in a certain forum and this is the feedback'. Even if it is on the Kenyan gazette … Just send me a link. I click, I find it…" (NIUPLAN participant. Interview 6).

The same responses were documented for KLIP participants who mentioned that not only were they inadequately notified of the validation meeting, they were not also provided with results and outcomes of meetings previously attended.

> "No, they didn't come back"
> "Maybe they will come back but we haven't heard anything" *(KLIP FGD Participants)*
> "…We requested for it [feedback] but I noticed a few disadvantages. We got short notice and now we don't know the final outcomes. We need to be provided a report or feedback so that we are informed instead being ignorant of the outcomes" (KLIP participant. Interview 7).

In terms of accuracy of information, and whether participants' input was incorporated into the SEAs, most of the participants from both case studies mentioned that since there were no feedback or follow-ups, they were not certain if the issues and questions they raised in the meetings were answered and their input utilized.

> "They didn't use our input because nothing is done yet. Waste is being collected but final disposal is overly delayed so I don't think they have responded well to our issues" (NIUPLAN participant. Interview 9).
> "I hope so... In the previous meetings, some of our thoughts were captured on paper but we don't know if they will be utilized in practice... We are still waiting for the final stage of assessment which is EIA. It is that point I will know if my input was used" (KLIP participant. Interview 8).

> "Am not sure if they used my opinion. I was surprised when you called me, I said "Oh so they still have my number". Then when you told me it was a research I felt somewhat disappointed (at the facilitators) …" (NIUPLAN participant. Interview 6).

Do you think your input was used? (FDGs)
"There wasn't any feedback so I wouldn't know if my opinions were used"
"I am yet to know if my suggestions were used"
"I would have loved to see how my questions were addressed but I haven't seen them"

Nonetheless, two NIUPLAN SEA consultants stressed that public opinion was duly documented and addressed in a separate section of the draft SEA reports, and has been used to shape and formulate the monitoring procedures in the EMP framework. My review process of the PEDP of the NIUPLAN SEA report also affirm how specific issues and concerns raised during the consultations were outlined, and techniques to addressed specific issues proposed. Similarly, the lead consultant for the KLIP SEA responded that all questions asked during the public engagement process especially regarding the new leather city were documented, tackled and used to formulate mitigation measures in the EMP plan. Although the KLIP participants I interviewed could not specifically verify this information but the only challenge encountered and regretted, according to one of the practitioners, was not properly communicating feedbacks to the participants which has left many wondering and questioning how meaningful the engagement process was.

5.8.4.2 Does the process create opportunities for public to participate next time?

Despite their feelings about the unsatisfactory nature of the public participation processes, all the community participants interviewed in both SEA cases thought they were availed the opportunities to participate, and would like to participate next time. This, according to them, is not only because it is their right to be involved in any developmental decision making process, the participants would also like to follow up on their community developmental updates, waste management outcomes and related resources utilization discussions until their concerns have been properly addressed.

"We just have to [participate]. Apart from factory and employment, we only have one sewer line in this community. Once they open up this plan and people relocate here how do they intend to manage the sewerage systems? We have to follow up on these issues"
"We must participate because of the opportunities and benefits we stand to gain, and to follow-up on any waste issues…I will like to participate next time because …I also believe it is the only way our voices can be heard" *(KLIP FGD Participants)*

"Yes, because I will like to tell them to always follow up on their meetings. I also would like to know if my opinions were used. Also, it is important that whether a project is being implemented or not, we deserve a feedback" (NIUPLAN Participant. Interview 10)
"Well I gave my input as much as they never used it. I will love to participate again to know why my input was not utilized. The issue of garbage is on us, if we do not follow up, we might continue to be left out" (NIUPLAN Participant. Interview 5)

5.8.5 Equal opportunity to participate in any form of discourse

For an EA process to be deemed valid, participants should not only be invited to contribute, but also must be availed an equal opportunity to partake in all stages of EA process (Therivel, 2010; Sinclair and Diduck, 2001). The Kenyan National SEA guideline also specify that the public, particularly the most affected, must be invited to participate in all the stages of any SEA process (NEMA, 2012; OECD, 2006). The indicators developed to address this participation component in the Kenyan SEA context includes the type of participants invited, techniques and methods of participation employed, funding options available, and what other systems were used to actively involve the participants.

5.8.5.1 Are there opportunities to participate in the entire SEA process?

Information gathered from both SEA draft reports and interview responses indicated that public consultations were conducted in the scoping, baseline, detailed study and validation stages of the SEA process. However, interview responses from some of the participants revealed that they only had the opportunity to contribute during the baseline data collection meetings, and that the validations exercises were only conducted to share what have been proposed and how it will be

implemented. In terms of impact prediction, PPP mitigation options and mitigation measures, three participants responded that they were asked to describe the existing issues faced by the communities such as water, sewer and solid waste issues and what sustainable options exist to better manage such issues. Six participants pointed that they suggested proper collection, transportation, recycling and composting techniques as the best alternatives to solid waste management.

Two KLIP focus group participants and one interviewed individual felt they contributed meaningfully by providing alternatives and enhancement opportunities to all concerns raised but were skeptical as to whether their contribution would be used.

> "Athi river basin is the only river basin where they can get water to run the tanneries and also the river which the community depend on, the river is getting dried... What could have been proposed is to trap some water during raining season to make huge reservoirs and dams…Rain harvesting and recycling and reusing of treated effluent …were also what we proposed but how committed are they in terms of implementation? How will they protect the resident's current source of water?" (KLIP participant. Interview 7)

In terms of overall attendance of meetings, of the 15 NIUPLAN participants interviewed, 7 attended one of the SEA meetings organized in their community centers, 4 participated twice, 3 attended all consultative fora, while 1 sounded unsure of how many times he participated. The 8 NIUPLAN FGD participants on the other hand, attended only one consultation meeting but had participated in the Nairobi City County participation and mapping exercises earlier organized prior to the NIUPLAN SEA. According to the PEDP, although the NIUPLAN SEA recorded the most thorough public engagement and stakeholder forum in the entire stage of the SEA process especially scoping, baseline data collection, and PPP impact identification, the participants still think they were not properly involved in the remaining stages of the study.

All 5 individual KLIP participants interviewed participated in 2 out of 3 public consultative meetings held at the Technology Development Centre in Kitengela, Athi-River. While only 1 participant attended all 3 meetings, he thinks that the proponents had attached little importance to public opinion since one participant had to take decisions on behalf of many that missed the meetings.

> "I think …there was weak involvement of community members... Others are being kept aback. How can only one person take decisions for so many people? There were so many cabinet representatives, top consultants, and top government secretaries in attendance… Would you then refer to such meeting as a public meeting?" (KLIP Participant. Interview 8)

The SEA practitioners involved in both SEA cases acknowledged that in as much as consultations were held in all stages of the SEA, and opportunities given to participants to contribute and identify PPP alternatives, not all participants were expected to make it to all three stages of meetings, but a good number of participants attended all the campaigns especially the disclosure and validation exercises, a strong requirement for standard SEA process (SEA Consultant. Interview 2; Interview 5).

5.8.5.2 Are the marginalized persons invited to participate?

As discussed earlier in the chapter, participation especially in the NIUPLN SEA was not only extensive but also involved different categories of participants from host PPP communities ranging from women and youth, to the physically challenged, and marginalized slum dwellers. Five interviewed women participants confirmed they had participated and were given opportunities to ask questions. According to one of them, Kenya is gradually becoming a more gender balanced society where women are often well represented in decisions taken around government approved developments. Similarly, women and youth were not only invited in the KLIP SEA, but were given preference in contributing especially regarding issues related to their communities and the proposed leather city, and how they can be more involved.

All marginalized groups of participants interviewed from both cases expressed confidence with such public engagement process as a platform that not only ensures that all opinions and views from all concerned Kenyan citizens are brought to bear, but also giving a voice to the most affected group increases practitioner-public trust and transparency. Although the KLIP public disclosure *baraza* was attended a mix of community members, two participants pointed that waste-based CBOs and Local NGOS were absent since Kinanie was still a small community with lesser waste management challenges. Nonetheless, one KLIP participants believed that inviting more women and youth, and at least one of the group representatives in the validation meeting could have been a better way to ensure more participation representativeness.

5.8.5.3 Do opportunities exist for active participation?

To ensure active participation in any SEA consultation, adequate mechanism that can facilitate meaningful public discussions and contribution must be provided. This includes use of interactive forms of engagement such as workshops and group discussions that can stimulate self-reflection of issues pertaining to the specific SEA study, and that is geared towards influencing decisions taking around such PPP (Sinclair and Diduck, 2001; Heiland, 2005). NIUPLAN SEA study presented more opportunities for active participation than the KLIP SEA. Data gathered from the document review process, as well as interview responses from both the NIUPLAN SEA consultants and local participants revealed that in each participation meeting, participants were divided into sub-groups, provided with writing materials and manuals, and given specific topics of discussion. With the help of the SEA moderators, participants in their sub-groups brainstormed and came up with various answers and ideas related to their thoughts as well as on topics given that they would like to be incorporated into the masterplan, and were asked to present back to the entire group. This, according to the participants, improved their ability to reach a compromise, increased their understanding of the entire SEA process, as well as boosted their learning process.

> "It was an open forum where we were to contribute. We were divided into several groups, some people can discuss about drug abuse, others can discuss about security, others can discuss about water, others solid waste. So, we were divided into groups whereby you can contribute to areas where you are much more conversant with..." (NIUPLAN Participant Interview 6).

> "They provided us handout and they requested us to have writing materials in analyzing those objectives, their objectives, and we came up with our suggestions… and [the Group exercise] helped us to learn a lot…" (NIUPLAN Participant. Interview 3)

> "I went to the meeting twice and I can remember we were divided into smaller groups and given tasks to solve. There in the group we came up with many ideas related to the masterplan, and even issues in Nairobi itself. We later gave a group presentation based on the task… I think [the SEA facilitators] have done well in coming up with such group ideas because I now understand the process better…" (NIUPLAN Participant. Interview 10)

On the other hand, the facilitators of the KLIP SEA pointed that although they could not divide the participants into groups or categories, participants were provided with writing materials and pamphlets and were asked to come up with individual thoughts on current resource distribution especially related to the Athi-River, and to describe the potential impacts of the tanneries on the river as well as on the community in general. One of the participants mentioned that the 2 meetings he attended commenced late which probably limited the activities that were supposed to be held in the meetings.

> "No. we didn't go that far because the meeting was a little delayed but I think everybody had a chance to say whatever they wanted to say and ask questions. I think [the SEA facilitators] provided folders and information booklets, and they promised to provide us with a report so that we can be able to pick everybody's thoughts because in a meeting like that we might not be able to pick every information... Again, my role was not very specific. We were basically listening to different presentations from leather experts and other government experts who were hired to come and present the SEA concepts..." (KLIP Participant. Interview 7)

5.8.5.4 Are there financial support mechanisms for participants' involvement?

Although the SEA consultants interviewed from both SEA cases recognized that bringing local participants and stakeholders together to partake in such rigorous public exercise would be energy and time intensive on the part of the participants, providing monetary support was however,

not considered an option. Instead of proving cash compensation, the SEA consultants pointed out that they had conducted the meetings at locations close to participants' residences, and had provided lunch and coffee breaks for every participant during the meetings. In addition, one of the KLIP proponents maintained that for a plan like the Leather City, providing financial compensations in form of cash will not only label the proponents as corrupt and looking for ways to maneuver the people into supporting the plan, but also, will raise questions on the authenticity of the participation process which might impact the long-term decisions taken on the plan.

> "…No monetary funding was provided to any participants including the meetings with the stakeholders. The only thing we did was to provide lunch because the meetings were held after lunch hours. We always discourage funding participants, because when we do, in the next series of meeting, they will always demand for more, which might make our project very expensive in most cases. So, we never fund them…" (NIUPLAN SEA consultant. Interview 4)

> "We rented the hall we used for the meetings and we provided lunch and drinks in each meeting we held. We did not give out money to anyone because we do not want to influence people's decisions and responses. We wanted it as transparent as possible. That caused a sort of problem between EPZA [the proponent] and some of the members of the Resident Association. We told them we cannot afford to give out money… because it will impact our objectives. We only advise that they can gain from the plan in terms of job benefits, growth and development…" (KLIP SEA Proponent. Interview 6).

Most of the participants interviewed in the two case studies were somewhat satisfied with just being compensated through provision of meals, however, one KLIP participant would have preferred that the meetings were held at a location closer and more accessible by most members of the communities that will most likely be impacted.

> "…First, I would not hold a public participation exercise in a hotel. I will hold the meeting in an open space, and nearer to the people so that there would be more participation. We would get more significant representation this way even if is to come up with criteria for selecting representatives. But when the meeting is held many kilometers away it becomes difficult for some community members to attend" (KLIP Participant. Interview 7)

5.8.6 Ability to assess arguments systematically and accept a rational consensus as valid

For the final participation assessment component, the indicators developed were selected to explore if the participation process allows for participants' performance improvement, facilitate transparent decision-making strategies, or recognize and incorporate public input into the final plan outcomes (Sinclair and Diduck, 2001).

5.8.6.1 Does the process provide adequate methods to evaluate participants' performance for improvements and consensus-building?

Mezirow (2000) described the use of engaging dialogue as vital for adult learning because not only does it provide a platform to explore common values and judgement, but also allows for reassessment of habits of mind, beliefs, interpretations and meanings, a pre-requisite of emancipation or self-transformation. It is like reflective discourse since it encourages participants to develop a more in-depth evaluation of their reasons and alternative views of the PPP discussions, to be able to influence core PPP decisions (Mezirow, 2000; Sinclair et al, 2008; Sinclair and Diduck, 2001). A participating NEMA official and one NIUPLAN SEA consultant pointed out that women and youth, especially children were asked to view and draw what they want Nairobi to look like in the nearest future. Other participants were asked to dialogue in groups and come up with a representation of Nairobi in the next 10 years.

> "…Like I said, yes, we involved children, women, youth, disabled, marginalized and several other vulnerable groups which is already given in the SEA report … to a 100 percent rating. We had them in groups, where we asked them to visualize Nairobi in the nearest future. We also gave them tasks and mapping tools and ask them to build scenarios. Every group told us the key issues that they wanted to be included in the SEA…this was another way to help them understand the concept of participating in group discussions and reaching a compromise…" (NIUPLAN SEA Consultant. Interview 2)

Two KLIP participants who mentioned that the SEA facilitators only used slide presentations during the meetings seemed not to be very pleased as there was no group dialogues

or reflective group tasks put in place to foster their understanding of the participation process (KLIP participants, Interview 7 and 11). Again, most of the participants from the two cases thought that coming together in subgroups and building scenarios and tasks was a good technique of re-evaluating themselves, their values and views. This has helped them to develop a deeper understanding of realizing a goal through discourse, which could help shape discussions and select options that best meet their needs and those of their communities during the final implementation of the PPP.

5.8.6.2 Does transparency exist in decision-making processes?

To accept participants' views and judgements as meaningful, their input must be integrated in the implementation of PPPs, and SEA proponents and facilitators must ensure transparency throughout the entire SEA or public participation process (Therivel, 2010, Sinclair and Diduck, 2001). When there is transparency, not only do the participants own the projects, but are also assured of practitioner-public trust that can resolve conflicts between host communities and PPP proponents. The NIUPLAN SEA was viewed by most NIUPLAN participants as more transparent when compared to the KLIP plan. The interviewed KLIP participants maintained that transparency of the KLIP plan might be questionable owing to the existing unfriendly sewerage facility created by the same proponents, and that has not been given proper attention. One KLIP participant pointed that although the proponents made some commitments by signing a Memorandum of Understanding (MOU) that any form of waste emanating from the tanneries will be duly handled, however transparency issues might persist once the MOU is breached.

> "You see, EPZA has a sewage treatment system that flows through the community to where the project will take place. As you go to the site you will notice a foul odor coming from the sewage pond… they said all these issues will be captured during the detailed EIA study. I feel it should be captured now so that in case they fail, we will know what to do…" (KLIP participant. Interview 7)

> "Although there is an MOU but where do we go with that? If they had said 'if there is a breach of understanding, communities can take the matter to court' then that's more like it. It means that we have been charged with the power to take necessary actions if they pollute our environment. We should also be provided with details so that as a community our voices become one if they fail us" (KLIP participant. Interview 11)

In addition, insufficient notice of meetings, inadequate access to the SEA documents, improper timing of the SEA as well as poor dissemination of results to participants in both cases also contributed to the uncertainties surrounding the plan transparency. Owing to these cons identified, many participants consulted have been left wondering as to if their input will be used at all, or whether their concerns were at least addressed in the SEA reports.

5.9 Chapter Summary

It has been recognized that public participation in EA and SEA decision processes in Kenya has high probabilities of not only integrating a wide range of public interests and views into development activities, but also have grown to be more open, inclusive and thorough in bringing stakeholders and local communities into higher-level PPP discussions. In both SEA cases, categories of participants involved include the general public, government agencies, and other stakeholders, while techniques and methods of engagement used include official letters, emails, text messages, phone calls, television and radio advertorials, newspapers, posters, websites, and public *barazas.* Noted benefits of involving the public identified are improved community-practitioner relationships, public ownership of projects, incorporation of Traditional Ecological Knowledge (TEK), as well as acknowledged right of the public to influence decisions. Finally, the challenges of public participation identified in the 2 SEA cases include ambiguity of the SEA process, lack of proper SEA education and awareness, inadequate participants' access to information, language barriers, and adversarial nature of seeking public input in Kenya.

Six ideal conditions of learning were described and developed with indicators to assess if participants were meaningfully engaged in the SEAs within the Kenyan context. Of the six conditions, notable mix of strengths and weaknesses were recognized and have been described to improve SEA and public participation process in Kenya, and to encourage participants' learning outcomes geared towards more sustainable resource and environmental management (Sims and Sinclair, 2012; Sinclair et al., 2008). Some of the strengths identified were freedom from coercion and manipulation, equal opportunity to participate, inclusion of the most affected public, and ability to reflect on presuppositions and accept consensus as valid. Although not very evident in the draft SEA reports, some of the weaknesses acknowledged by majority of the participants include poor public notice of the SEA meetings, inaccessibility of SEA documents and irretrievability of uploaded documents, late timing of the SEA, hence limiting the inclusion of the public into early strategic PPP discussions.

Other disadvantages of the participation process identified include poor participant funding, poor communication and feedback programs, and lack of clarity and transparency. Moreover, in their study of public participation in EA, Spaling et al, (2011) and Sinclair and Stewart (2007) argued that for the public to be meaningfully involved in decisions that most likely would impact them, not only will there be fair notice and timing, inclusiveness of both interested and affected publics, fair cost sharing, encouraging communicative environment, skill building and interactive workshops, but also integrity and accountability, transparency of PPP facilitators, and clarity of process intentions must be enshrined in any EA, SEA and public consultation proceedings.

6 Learning Outcomes and Actions in SEA and SWM in Kenya

Learning through meaningful public involvement in EA and SEA decisions has been shown to influence participants' actions towards are more sustainability-focused actions (Sinclair et al., 2008; Diduck et al., 2012; Neefjes, 2000). Transformative learning theory posits that when adults converse within a social setting, not only does it result in individual development, but also allows adults to critically assess their frames of reference and meaning-making processes, the result being "to become autonomous, responsible thinkers" (Mezirow, 1997, p. 8; Mezirow, 2000). Learning that involves acquiring new task-related skills and knowledge is described as instrumental, while learning to translate meanings, understandings, feelings and intentions when being communicated to is termed communicative learning (Habermas, 1984; Mezirow, 2000). Sometimes, instrumental and communicative learning are interwoven depending on context, or one instrumental outcome leading to a communicative outcome and vice versa (Diduck et al., 2012; Sims and Sinclair, 2012). However, conditions of learning described in Chapter 5 are used to explore individual instrumental, communicative and transformative learning results of participants involved in this research and where these learning lead to action outcomes aimed at sustainability (Table 13).

Table 13: Summary of the Learning Actions Evidenced Among Community Members, CBOs, and Self-Helps in the Two Selected Cases

Learning Outcomes	**Actions**
Instrumental	Acknowledged importance of planting trees and flowers Importance of energy conservation Benefits of flood and erosion control through drainage restoration Importance of water conservation and restoration Importance of household waste sorting, collection and transportation to designated transfer stations Importance of harnessing new resources from waste through recovery and recycling activities

	Importance of composting food waste as organic manure in crop cultivation Understanding of overall Environmental Management
Communicative	Improved interaction and cooperation among community members Importance of sharing of ideas and interests with other community members Understanding the importance of community waste cleaning and management activities Importance of community team-bonding to achieve common community goals
Transformative	Becoming more aware and self-reflective of community/backyard waste management Importance of roles of leadership by example Benefits of personal care to the environment Understanding the importance of transformation through one's faith or religion (faith-based transformation)
Individual and Social outcomes	Planting trees and flowers in backyards and *shambas* Drainage cleaning and restoration Increased interaction and sharing of ideas among participating community members and non-participants Developed improved systems for waste sorting, collection, and transportation Creation of new materials from waste through recovery and recycling artistry for job creation and empowerment Applying compost food waste as organic manure in *shambas* Educating other non-participating communities about the overall benefits of Environmental Management

6.1 Instrumental Learning

Instrumental learning involves testing and validating one's judgements through problem-solving abilities often achieved by physically interacting with one's environment (Mezirow, 2000). In their study of the outcomes of a Community-Based Environmental Assessment (CBEA) process, Spaling et al (2011), Walker et al., (2014) and Sims (2012) documented many examples of instrumental outcomes through participation in EA and SEA processes, such as erosion control, tree planting, forest and water conservation, and maintenance of damaged infrastructures, as well

as new understanding of EA and SEA. These results are like the interview responses of the 15 NIUPLAN participants and 8 KLIP participants involved in this research, with more learning outcomes documented from the NUIUPLAN participants. When asked if they leaned any new skills as part of their involvement in the NIUPLAN SEA, tree planting, general waste recycling and composting, drainage repair and cleaning, and community waste activities were common responses from the participants including the CBO groups.

> "…I learned that planting of trees is essential for environmental protection. We must plant trees and grasses where necessary... I also learned that when you plant trees, once they grow very mature, you can get timber from them. You can build houses from them, at least to keep shelter over your head. So, overall, apart from keeping the environment clean, there are also benefits from planting of trees, for both the present and future generations…" (NIUPLAN Participant. Interview 1)

> "…First, I now keep my environment clean especially during the raining season. I don't allow water to be stopped around my area. Cutting grasses around your home and cleaning the drainages all the time is important so that it doesn't cause flooding…" (NIUPLAN Participant. Interview 4)

It appeared like a hard decision for many of the NIUPLAN participants because although they have learned many new skills, it seemed impractical to achieve as many of them are renting in the city with no enough spaces for them to exercise their tree-planting skills. Nonetheless, some participants from other communities with open backyards have started planting trees and flowers, and have mobilized other neighboring communities to follow suit.

> "…We learned few things on environmental conservation… We learned that we can plant trees to increase oxygen that we breathe in, but unfortunately 80% of the poor are renting in Nairobi…and the houses are tightly packed. Where do we plant the trees? We volunteered to plant only along the roads and rivers…and we have organized ourselves and youths from neighboring communities to achieve these tasks…" (NIUPLAN Participant. Interview 2)

> "We are also currently planning to mobilize ourselves as a group to clean up our drenches. There are plastic bags and bottles that have blocked our drainages. If we don't clean the

drainages in time, it might result in flooding. We don't want to experience flooding in our community…" (NIUPLAN Participant. Interview 5)

Three NIUPLAN participants appreciated the SEA facilitators' explanations and discussions on energy conservation and waste management options for the city of Nairobi during the meetings. Before participating, they had little idea of why environmental protection and conservation actions are most important but after participating, they could put the new ideas into practice.

> "I remembered during the discussions I learnt how people can avoid contaminated water by putting a bucket of water on top of your roof to allow the sun to heat it up. I have tried it. This is a natural way of heating water with solar energy. It is cheap and it can conserve a lot of energy…" (NIUPLAN Participant. Interview 10).

> "We were told in the meeting that planting trees are good way of preventing erosion, so by planting trees we protect the environment at the same time it gives us air that we breathe... And they also mentioned that because we breathe out carbon dioxide, the surroundings [plants] also benefit by utilizing it for food and to give us oxygen in return… All these were scientific lessons we got from the meeting. For you to protect the environment, I learned that you must plant trees and grasses where necessary for environmental protection. Immediately after that meeting, I went home to plant trees and am happy about it" (NIUPLAN Participant. Interview 1)

> "That exercise [SEA discussion] was very helpful. I have the knowledge that you must plant trees because it is a good source of oxygen and the trees helps us to get rain. Although I cannot plant here in Nairobi but when I go to my home country, I will buy more nurseries and plant a lot of trees and flowers. They are good looking for the compound and good source of shared oxygen…" (NIUPLAN Participant. Interview 9)

Most of the tree planting, waste management and drainage cleaning responses came from Nairobi city inhabitants who understood the effects of the present waste challenges on the city residents, especially flooding and erosion in most rural communities. In fact, most of them have reflected on the many values associated with tree planting, drainage repair and garbage collection with respect to the need to relive the city of its present waste predicament. Although not all KLIP participants agreed that they had learned any new skills during the SEA meeting, instrumental learning responses from most KLIP participants were more of communal problem-solving skills.

One participant mentioned that joining a group in her church has increased her zeal for planting more trees and flowers but participating in the SEA meeting made her develop a deeper appreciation of the benefits of environmental protection in general.

> "We had learned how to plant trees in the church. Sometimes our pastors distribute seedlings to church members to encourage us plant trees and flowers even in our homes. These we have learned long ago but participating in the SEA *baraza* was an eye opener for me to improve on more ways to protect our environment… (KLIP FGD Participant)

One gap that was observed in the KLIP SEA meeting, particularly in the disclosure and validation meetings according to two KLIP participants (Interviews 8 and 11) was that the facilitators failed to utilize the participation process to properly communicate environmental conservation message across to the participants, especially the less-educated participants. According to the participant, instead of being too keen on 'getting the project done', the SEA facilitators could have made out time to share and teach the participants more environmental problem-solving lessons and values that can contribute to sustainable development decisions.

> "In terms of the entire community, we are still way behind. There are still a few things we need to know. The meetings would have been a good way to share this information to members… I cannot say I learned anything because the gathering wasn't much of a learning meeting to me. It was a meeting that was called because of a tough decision EPZA [the proponents] wanted to make in Kinanie community so I haven't learned anything about my environment from the meeting..." (KLIP Participant Interview 11).

In sum, most of the interviewed participants agreed that they took home a lot of lessons especially regarding to controlling and manipulating their physical and social environment. This resulted in more individual and communicative transformation discussed below in detail, in such a way that is not only beneficial to their livelihood and sustainability but also for the benefits of their children.

6.2 Communicative Learning

As described earlier, communicative learning logically assesses the truthfulness and validity of intentions, ideas, and words being communicated to us (Mezirow, 2000). In the resource and EA literature, participants that revealed communicative learning outcomes acknowledged general community work, teaching of community norms and values, and sharing and mobilization within groups (Diduck, 1999; Spaling et al, 2011; Walker et al., 2014). More than half of the NIUPLAN participants reflected communicative outcomes through their responses that indicated working and interacting together as a community, understanding individual role in information dissemination among community groups, and mobilization of groups to achieve community goals together. Two physically challenged NIUPLAN participants who also head their individual community self-help groups explained that since participating in the meetings, they had mobilized their groups in joint community waste collection and transportation, and drainage cleaning exercises, to prevent flooding and erosion from ravaging their communities.

> "I learned the involvement of local communities in community cleaning. We have successfully implemented a project concerning youth involvement in waste management and urban planning. We collect plastic waste because they block our drainages so easily...we don't want flooding in our community the third time… We collect and burn or dispose properly. We also teach people to be neat, clean the toilets and surrounding…" (NIUPLAN Participant, Interview 5)

> "We not only mobilize as groups, we also train and educate other groups on how to harness waste as a resource. I may not be in a position to do it because I am physically challenged, but I am able to share the information I have gotten to other groups and educate them on appropriate ways to be clean…for the benefit of our communities" (NIUPLAN Participant, Interview 10)

> "…I am a member of a water group. We go to communities for dissemination of information. We disseminate this information to the people, and the need not to hold back in forums... We also provide feedback and services to our group… So, in working with the community with regards to public participation we come across most of the issues cutting across water and sanitation. We talk about water and sanitation within our group because where there is

no water protection, environment is bad, where there is no sanitation the environment is bad too…" (NIUPLAN participant. Interview 6).

Participants indicated that relationship building between the more knowledgeable participants and the less informed ones was also a notable benefit of communicating with each other during the meetings. When asked if participating in the SEA meetings was valuable to them, one NIUPLAN respondent and one KLIP participant, who are also leaders in their respective communities expressed satisfaction because they have not only met new people but also have developed interest in each other's problems.

"…After the meeting, I met two other participants in town. One of them called me from afar, I was a little surprised because I couldn't remember who he was. As soon as we recollected how we met we hugged and went for lunch. He then introduced me to where he works as an environmental facilitator. Since then we've reconnected and became friends and have mapped out plans on how my community especially our CBO groups can benefit from him…it was an interesting experience…" (NIUPLAN Participant. Interview 1)

"I learned that it is important to work in harmony with the members of the community. This way, you listen to each other, you understand each other, you also gain more respect. And we cannot move forward without each other. The benefit is that if you need each other's help, we offer assistance to one another" (KLIP FGD participant)

Two KLIP women participants mentioned that although they had learned how to communicate within their CBO group, meeting and interacting with other women from Kajiado and Kitengela communities during the SEA public *baraza* was beneficial to their group as they have also planned to meet themselves again to discuss on how to work together to achieve more waste recycling goals for their communities.

"The few skills we learned prior to the SEA meeting was how to make fashionable bags from plastic bags. We have a small community-based women group who come together to recycle plastic bags for table mats, beads and other fashion items. Meeting other women-based waste groups from other communities in the meetings was of great advantage to our group because when we meet again and again, we can continue to think of many other waste ideas together, and be able to make some income for ourselves…" (KLIP participant. Interview 16)

Another KLIP interviewee pointed that since he became a resident of Kinanie, he has brought many community members together, to share the values of protecting and managing the environment for the common community good.

> "It will be of interest to you that it was when I moved into this community, I became more practical. I started bringing communities and groups together, I began to tell them 'this is how you should manage your environment, this is your environment, manage it well'. One thing I decided again was to bring people together and get them to know these things and solve together because if I am the only one who knows, I will have a lot of problems…" (KLIP Participant. Interview 8).

The above communicative learning outcomes in participants from both case studies show that not only have they been positively impacted by the many benefits of working and interacting together during the SEA public participation process, they have also been able to assess and interpret meanings of the ideas being communicated during the meetings. Consequently, many of the participants that demonstrated these evidences of togetherness now clearly have a greater sense of emancipation as a result of being able to control their environment through shared ideas, leading to more profound transformative learning presented in more detail below.

6.3 Transformative learning

When adults reflect on challenging assumptions and beliefs, frames of reference and habits of mind are not only transformed, but also opinions and meanings are justified (Mezirow, 2000). In addition, Taylor (2007) and Cranton (2006) argued that when properly analyzed and re-evaluated, transformative learning can also be reflective of instrumental and communicative intentions, purpose and feelings. Transformative learning outcomes in previous EA studies revealed that although they were more embodied in the instrumental or communicative domain, change in personal viewpoints, individual empowerment and personal care were documented among participants involved in EA and CBEA cases (Sims and Sinclair, 2008, Spaling et al., 2011,

Diduck et al., 2013). The responses of NIUPLAN participants interviewed revealed that by attending the meetings, their waste management points of view have changed, and that they are on a path to be transformed to be more waste conscious especially since their communities are often at the receiving end.

> "…Since that [SEA] meeting, my viewpoints about waste management have changed. For instance, there was a day I was in downtown waiting for a friend, there was traffic and suddenly someone dropped a biscuit box from a car, I looked closely and I found that she was just a kid with her family. I felt bad. I went towards the car, I took the biscuit box and told the man 'sir, your daughter dropped this box and there are no bins around. Would you please go with it and drop it in a bin?' He was likely educated and very understanding. He understood and took the box back. He kept on looking at me and was wondering how I manage to approach him because of waste [laughs]. I didn't feel very good because if you drop a biscuit wrap, and I drop and another person drops without anyone caring to collect, the city will look dirty very soon. So, it starts from you. If 1 million people don't care, one day it will come back to haunt us…" (NIUPLAN Participant. Interview 1)

Another common transformative learning outcome described by the participants was learning leadership roles by example. According to two other NIUPLAN interviewees, participating in the SEA meetings not only changed how they now view or manage solid waste, but also, by taking a bolder step in proper waste handling like sorting, bagging and collection of waste at home. This teaches and motivates other community members and neighbors to engage in such processes too- just by someone taking the lead and doing it.

> "…My personal views about waste has changed tremendously. I have learned to sort and bag my waste, and clean our toilet even when my neighbors are not willing to. Once they see me doing this, they are encouraged to do the same. I have also attached a sticker on the garbage room that reads "please sort accordingly" and I mounted a sticker on our shared bathroom door which states "please wash after use". I wash after using and this has encouraged people to do the same…" (NIUPLAN Participant. Interview 10)

> "Well, I always advise people to live by example. When people see what you are doing, they will be willing to change too… I have learned to give my food waste to the pigs. I will start sorting plastic wastes too. I don't see waste as waste anymore. I see it as a resource, only that we need more awareness on how we can convert them. We make good fertilizers

> upcountry because it is a good source of nutrient to our crops. But it is different in the city here. We need more of the knowledge here" (NIUPLAN Participant. Interview 15)

One NIUPLAN participant attributed her transformation experience to faith in God. As a Christian, she believes that God readily answers her prayers only when her environment is neat. She therefore strives to ensure that her environment is always clean and kept free of litters of waste, and whenever she notices uncollected waste in her neighborhood, she leads by example by collecting the waste and taking them to the designated collection point.

> "When I wake up in the morning, I have to keep my compound clean because I believe that cleanliness is next to Godliness. God does not live in a dirty place, so if I am a dirty person, I believe my prayers might not be answered [smiles]. I also clean my drainages to avoid mosquitoes, I advise others to do the same because I believe whatever affect my neighbor also affect me…" (NIUPLAN Participant. Interview 9).

The KLIP participants again argued that the meetings had not provided an avenue for transformation, rather, the facilitators and proponents were very keen on getting the plan approved, thus ignoring the abilities and opportunities that exist for the participants to learn from the meetings. In general, majority of the participants in both SEA cases revealed more instrumental and communicative results more than the transformative outcomes. However, the CBO groups involved in this research revealed a lot of learning outcomes with respect to how it has resulted in action for sustainability. In the next section, the roles of CBOs, local Environmental NGOs and other waste-based self-help groups will be explored in detail. Also, their role in the SEA cases, the challenges they face as a group, as well as improvement opportunities in the SEA and SWM context are also explore and described.

6.4 Learning Outcomes of CBOs, Local NGOs and Self-help Groups Shared through Stories and Experiences

Since participating in the meetings, many of the CBOs revealed that not only have they voiced their concerns at the meetings, they have also developed close interaction and shared values within their groups, and have learned many new environmental problem-solving skills that have enabled them grow in their groups leading to more self-empowerment and transformation.

> "One thing I realize is that no one wants to live in a dirty environment. When I started cleaning the Mustard Court [His place of residence], other neighbors joined me, which motivated me the more. We cleaned the mini dumpsite at the back of the court, we planted trees and flowers. Through this, we have learned within ourselves that we can be safe from water-borne disease, mosquitoes that causes malaria fever and other communicable infections" (Leader, Dandora CBO. Interview 1).

> "Yes, we have learned a lot of skills, right now we facilitate education and awareness in the community, we create sensitization such that people no longer dump waste illegally. They now collect their waste together for us to pick them up. Some of them even try to separate their waste at home which makes it a lot easier for us to handle. We lobby and advocate for good changes in the society, we partner with NGOs like PLAN international, Denmark based NGOs and local NGOs like FIDA Kenya- which have helped a lot in women advocacy" (Leader, Kawangware CBO. Interview 13).

> "We also organize seminars and awareness creation for those who are willing to know the importance of hygiene. Some people are ignorant and they do not want to learn how to improve. We are doing our best to ensure that everyone is carried along especially in terms of sorting, recycling and its associated benefits" (Representative, Kinanie CBO. Interview 11).

Interview responses from these CBO groups indicated that they have learned several new skills within their groups (instrumental learning), but when asked if what they have learned have changed their viewpoints about the environment, representatives from 9 CBOs shared their stories and described that not only had their viewpoints changed, they now have a better sense of responsibility towards waste handling and thus have also recruited many other individuals to join their many waste conversion initiatives (communicative learning). With the permission to use their

names in this research, the first participant to share his experience was a member of the Dagoretti Refuse Collectors called Paul. Paul joined DRC as a youth who had nothing upon graduation from high school, however, when he joined with his friends, he was introduced to household garbage collection and other community empowerment activities. He was given some basic equipment and a mini truck to start with. It has been 6 years, and he can support his family with the income he makes from the group, an achievement he considers a plus over some of his former school mates who are still struggling financially.

> "When I left secondary school, I wasn't able to get a job so I had the perception that not everyone would be opportune to take up white collar jobs. I ended up joining a CBO that collects garbage. My friends used to feel bad about me doing this kind of job but I must tell you that today I feel fulfilled because I am able to provide for my family and community…I feel better off than some of my classmates who are still struggling to feed…" (Representative, Dagoretti CBO. Interview 3).

Like this first story is the story of a woman named Florence who joined the Little Bees International NGO when she moved into Nairobi as she could no longer further her education upcountry. Florence knew that her new community, Korogocho, was faced with many waste challenges especially regarding reduction, collection, recycling and disposal. She started coordinating household waste collection and recycling before eventually settling for cloth recycling and making back packs and fashionable bags out of waste clothing materials, thus leading to the creation of her own CBO called Korogocho Smart Women group (KSW).

> "Personally, the reason why I joined this group is majorly because of this community. Korogocho is a community with a very dirty environment, because of that I worked as a community health worker. While on the job I realized that if you do not come out to address the major issue affecting the community especially waste issues, no one would care and it will keep on harming our health. I also thought that waste is something that when looked at closely is a good source of income…yes. People didn't realize this so I told myself 'You have to live by example'. I decided to start so that others can start doing it. I started to

coordinate garbage collection, recycling and disposal for the community, other women later joined me and that was how we started the group…

…Right now, we buy waste clothes from cloth-making companies. We buy in bulk…big sacs cost ksh3000 [$30USD]. It was realized that instead of disposing the waste cloth materials in the dumpsite, it could be recycled to make new products. These apply to seamstresses too… we go to collect their waste clothes on weekly basis. We have a store room where keep and recycle these waste clothes…we make up to 100 back packs in a day with each selling for about $20USD …To us, waste is right now, money!" (Leader, Korogocho CBO. Interview 6).

Since joining this CBO, Florence has motivated up to 80 other women to think about more ways to harness resources from waste and thus create more employment opportunities, income and empowerment to all members.

The third story is about the founder of the Kungatata Women Group (KWG) in Kinanie community who remained anonymous throughout the interview. Although the members of this CBO were not specifically invited to participate in the KLIP SEA meetings, she attended as a regular community member and contributed her ideas during the SEA *baraza*. Sharing her personal experience about joining the KWG, they realize in their group that plastic waste materials was gradually becoming a menace in Kinanie community which prompted them to start collecting plastic bags from dumpsites and off the streets. Upon collection, those bags are thoroughly washed, disinfected, and cut into strips. They are eventually knitted to form fashionable plastic shopping bags and other useful bag products, each selling for about 5-10$ each. Joining the CBO has not only changed the way she now sees waste, she now feels more empowered to keep collecting plastic bags, eventually reducing the infestation of plastic waste bags in Kinanie community.

"There has been a good market for most of our recyclables which has motivated us to continue. We intend to continue recycling because by doing so, we are not only making money to sustain our families but also keeping our community free of plastic nylon bags. Just imagine this; if it takes about 25 plastic waste bags to make 1 recycled bag, it means about 200 plastic waste bags will produce 8 recycled bags. If we continue to produce more

recycled bags, we will not only make more money but also achieve the goal of removing all plastic waste bags from Kinanie community in the next few years" (Representative, Kinanie CBO. Interview 11).

Moving on from recycling, 2 CBO groups, Mdaani Community group (MCG) and Dagoretti Community Association (DCA) are both in charge of Kibera Biogas Facility and Nyongora Biogas Plant respectively. Kibera is presently the second largest slum in Africa with an area similar in size to New York City's Central Park (UN Habitat, 2008; UNEP, 2012; Henry et al., 2006). There are about thirteen villages and shanties in the slum with more than 700,000 people living with insufficient basic amenities and services such as potable water, health centers, waste collection and transportation, and sewage management facilities (UN Habitat, 2008; UNEP, 2012). The existing amenities are over utilized owing to growing population of slum dwellers, and existing water supply systems are often exposed to large channels of garbage or human and animal waste (UNEP, 2011; Henry et al., 2006; Okot-Okumu, 2012). Nonetheless, Kibera hosts a high number of local and international CBO and NGOs who are working on finding lasting solutions to the slum's present housing and waste predicament. Most of the local CBO groups including MCG and KRG that were involved in this research have developed many waste recovery and recycling initiatives that have reduced the overall volume of waste generated from Kibera by at least 3percent (NEMA, 2012).

Waste-to-energy (WTE) is one of the trending waste conversion activities presently making waves in Kibera slum, with more than 5 WTE facilities already commissioned by the local government authority, an excellent management implication of the SWM hierarchy. For instance, the Mdaani CBO manages one of the biggest human waste biogas facilities in Kibera called the 'Toilet Initiative'. In his interview response, the leader of the group described that the biogas facility was developed to tackle the human waste challenges facing the slum. According to him, in

the past, community members defecate in plastic nylons and dispose illegally by 'throwing' from the window. This became an eyesore to the same community members who eventually came up with the need to curb the situation while generating biogas from the human defecates.

> "Kibera was known in the past as a 'flying toilet'. The Human Day Trust decide to come up with this Toilet Initiative to prevent illegal disposal of human waste and to harness its benefits in terms of biogas generation. Here we have toilets and washrooms, there is a septic tank where all human waste is channeled to, we call it a dome. The dome is airtight because gas from human waste must be generated in the absence of air, also known as anaerobic digestion…" (Representative, Kibera Biogas CBO. Interview 10).

Biogas is generated through an anaerobic process where microorganisms react with human waste in the absence of oxygen (Abubakar and Ismail, 2012). Over a period, biogas is formed and pumped through a gas valve connected to the dome installed underneath as a septic tank. According to the group representative, biogas is continuously produced from the dome and provides cooking gas to only immediate community members.

> "Gas is pumped through a suction pipe to this cooker system which serve our community members only. We haven't started selling in commercial quantities because we do not have enough resources yet. We have built a small kitchen within this facility in order to make sure our community members gain first hand access to the cooking gas, once we start selling in large quantities, we may run out of gas… but as long as the toilet is in use, we can never run out of biogas" (Representative, Kibera Biogas CBO. Interview 10).

At a discounted rate, host community members line up to buy gas from the Toilet Initiative on daily basis. Commercial sale of cooking gas has not begun because according to another group representative, biogas generated might not be sufficient to serve all neighboring communities. Moreover, since the main aim was to ensure that all host community members have first access to cooking gas, selling in commercial quantities is currently not under consideration.

Apart from cooking gas, Dagoretti Community in charge of one of the largest slaughterhouses in Nairobi, have also demonstrated that electricity can be generated from cow dung. The Nyongora Biogas Plant initiated by the United Nations Environmental Program (UNEP)

in 2010, was designed in Dagoretti community to curb the long-time pollution of the Nairobi River resulting in part from leachates of cow dung into the river. Responding to how the biogas facility function, the CBO leader described that about 4 tons of cow dung from the slaughterhouse is channeled daily to the biogas plant. The dung is first received in the digesters through an aerobic process that enable microbes to react to the dung in the presence of oxygen. Through a channel of pipes, the dung is fed to a tank and held for a few days. Gas is then collected in a gas bag directly attached to the tank, and through a generating machine, power is transmitted to the entire slaughterhouse in form of electricity.

> "We were shut down by NEMA because liquid waste from the cow dung seeped into the Nairobi river and polluted the river hugely…it was then that United Nations came to our rescue by initiating this biogas project…although mega plans are in place to manage waste from all the slaughter houses around. The biogas converts 4tons of waste in a day by first going through a microbial process in the digesters, then goes to a tank, and gas is pumped into a gas bag which eventually generates up to 10KVA electricity to the slaughterhouse. The residues collected from the biogas plant are air dried and sold to local farmers…" (Representative, Dagoretti Biogas CBO. Interview 9).

At the end of each cycle, residues of the cow dung are collected from the digesters, air dried and packaged in bags as organic manures before selling to farmers. The CBO representative reacted that the local farmers have expressed their sincere happiness not only because they buy the organic manure at a discounted rate, but also, they have recorded remarkable increase in cultivation and yield, and have saved money supposed to be used in purchase of artificial fertilizers.

The sixth waste-to-resource story documented in this research was shared by some workers at the Ocean-Sole Centre. Ocean-Sole Recycling Center was founded by a marine biologist Julie Church, an American citizen but Kenyan by birth and lives in Nairobi. She started the initiative when she went on tour with friends to the Mombasa beach. While swimming, they noticed that there were too many flip flops floating on the beach, likely because swimmers let them out while

swimming. Julie decided to conduct a research alongside some colleagues and found that flip flops had negative breathing and feeding impacts on sea turtles and other fish species in the beach. Julie wanted to save the turtles by bringing out all the flip flops and instead of disposing of the flip flops, she decided to make Safari-themed animals out of them.

> "The company has been in existence since 2006. It was founded by Julie Church when she was a marine biologist in Lamu [An Island off Kenyan Coast]. She found too many garbage flip flops in ocean and she decided to take action by making toys and key rings from flip flops. We engaged in beach clean ups to get all the flip flops out of the beach. We also get them from Nairobi water ways, and also pay people who collect from dumpsite about 25shilling per kg… Once they get here, they are washed, disinfected and carved out to different safari-themed animal types" (Representative, Ocean-Sole NGO. Interview 14).

Apart from getting flip flops from beaches, the worker mentioned that the organization also collect flip flops from dumpsites such as Dandora and Kibera, and along water bodies or buy from waste collectors and scavengers as a means of encouraging them since most of them make living out of waste picking. Narrating his personal experience to the researcher, another worker at the ORC mentioned how joining the organization has changed the way he now views and manages waste. He mentioned that since joining OSR, many people have been positively impacted, especially the waste pickers. Presently about 50 community people have also been employed in washing, carving and selling the recycled flip flops. Overall, the numbers of flip flops littering the beaches and our dumpsites have also reduced by at least 40 percent.

> "Working here has made me value employment. I feel like it's a way to give back to the community in terms of creating carving jobs and travel opportunities for community groups and individuals who are struggling for living. We offer them opportunities to develop themselves, and become their own bosses. We have also created an avenue to empower the kids through debates and other environmental awareness creation" (Representative, Ocean-Sole NGO. Interview 15).

One interesting point an OSR participant mentioned when asked whether recycling flip flops are sustainable was that not only jobs are created for as many poor Kenyans that are willing to

work or carve for OSR, also, overall environmental protection and conservation of biodiversity is guaranteed by ensuring that the marine animals are protected from the harmful effects of the flip flops. The sale of flip flops brings a lot of income to the OSR, however, interview responses from other workers depicted that when beaches are continually cleaned up, not only will the environment be protected or conserved, humans that directly or indirectly depend on these resources are equally protected.

> "I feel it is a great enterprise in the sense that we employed about 46 people who otherwise would not have a job…Kenya as it is has a high rate of unemployment. As far as marine conservation is concerned, cleaning up the beaches is a major thing we do and has helped the dolphins, turtles and other sea animals to live a healthy life. In our own little way, I think we are doing something incredible… although we are interested in the marine conservation and protection, we are more interested in the flip flops and overall environmental protection and sustainability. From past researches, marine lives have been endangered because of excess flip flops in the beaches so what I feel about this company is more than flip flops or profits generated" (Representative, Ocean-Sole NGO. Interview 16).

Finally, the last story to be shared is about a man named Charles, a 40-year-old who has lived in Dandora community almost throughout his lifetime. He spoke about how the Dandora dumpsite came to existence and what has transpired over the years resulting in Dandora housing the largest dumpsite in Nairobi, and Kenya (Figure 6). According to him, Dandora used to be an estate with vast infrastructural amenities such as churches, schools, health centers, good rail and road network, and factories. However, there was an old quarry mine near the city center that was abandoned for many years. To prevent major hazards such as traps for trucks and other heavy vehicles, the mine was re-opened by the government to be filled up with solid waste. Unfortunately, as the population of the city grew bigger more wastes were produced, which led to more dumping and hence what resulted in the Dandora of today- more than 50 acres of estate becoming the country's largest dumpsite (JICA, 2008; NEMA, 2012). Several health-related impacts resulting from the dumpsite have been documented by many researchers and funding

organizations who seek to find a lasting solution to curbing the ever-increasing volume of waste (e.g., UNEP, 2013; Henry et al, 2009; Okot-Okumu, 2012; Ngoroje, 2005).

> "Dandora used to be a well-planned estate with churches, schools, dispensaries, factories, and even railway lines. Now, as you have heard, Dandora houses the largest dumpsite in Nairobi. I feel really bad and I say to myself I want to make Dandora great again in my own little way. I want to make it habitable for everyone. I made this promise in 2013 and it was the same year we established these CBO-Mustard Seed Court with a vision to 'clean this court and make this court a modern court' [a court is a collection of apartment houses]. To show people that it is possible to transform the entire Dandora, and make it great again, we started by contributing KSH100, 000 to buy the necessary tools that will enable us to achieve our objectives" (Leader, Dandora CBO. Interview 1).

Figure 6: Nairobi City Dumpsite Located in Dandora Community (Source: Patricia Ozoike, Kenya 2015)

However, responding to the present situation and what he intends to do differently as a leader of the Dandora Transformation League CBO, Charles pointed out that he would like to ensure that Dandora not only becomes greener again, but also, by coming together as a group, they would come up with initiatives that ensure continuity such as conducting weekly clean ups and other

community waste management activities that will eventually alleviate the health problems resulting from the dumpsite. Siting an example, Charles shared an experience from 6 years ago, where people illegally dumped waste at his Mustard Seed Court (MSC) (Mustard Seed is the name of his apartment residence). The waste dump was gradually getting out of hand when Charles decided to call on his MSC neighbors, who also happen to be members of his CBO. Initially they were reluctant but Charles led by example and started cleaning the dump. Eventually the youths joined him in the cleaning process and by December 2013 they had stopped the illegal dumping and replaced the backyard garbage site with over 100 trees and flowers:

> "…There is a saying that cleanliness leads to Godliness. This means a lot to me. God does not dwell in a dirty environment. If you really want to be Godly, not only should you be neat as a person but also environment…your environment says a lot about you as well. One thing I realize is that no one wants to live in a dirty environment…
>
> When I started working on the dump 6 years ago, my team members thought I was crazy, they left me for a while. When they found that this court was becoming more beautiful, they decided to join. We planted over 100 trees and flowers, and look at how transformed it has become. We now rent out this backyard for weddings and birthday celebrations and other events" (Leader, Dandora CBO. Interview 1).

Figure 7: Before and After Pictures of the Mustard Seed Court. (Source: Patricia Ozoike, Kenya 2015)

Mezirow (2000, p. 16) defined meaning structures as a process of interpreting our experience, perceptions and cognitions within or outside our scope by providing a platform within which our "meaning-making are to be construed". Since joining the CBO, Charles has transformed in a great way, and his display of "repetitive sense of awareness" depicted a great sense of emancipation which he has spread among his group members. During a tour at the MSC backyard, Charles further described to the researcher that the backyard transformation was 'a journey to beautification'.

> "Although we couldn't remove all the garbage because they were already compacted in the ground, it was a terrible dumpsite we had here. We planted for beautification and transformation. We thought that instead of having piles of garbage we should have piles of flowers in the court. It was our CBO initiative to 'replace garbage with flowers'... This is the cleanest court in Dandora presently. It used to have a mini backyard dumpsite but with the help of other youth I was able to transform this court…Because if we do not act fast on the dump, not only our health will be impacted but also and our children" (Leader, Dandora CBO. Interview 1).

Apart from personal transformation, Charles has recruited up to 6000 youths in Dandora in volunteer waste collection, recycling, recovery, trees and flower planting, and they also intend to start working on the main dumpsite. When asked if there is a possibility of the youth to clean the main dumpsite, Charles responded that although they have the skills but there are inadequate resources and equipment to effectively work on the dumpsite. Calling on the appropriate authorities like NEMA and the Nairobi City government, Charles maintained that when CBOs are equipped with the best resources, not only will they be willing to mobilize themselves in mass, but also will likely achieve more waste recovery and overall management of the city dumpsite.

> "Again, from the records it will cost the government about 2billion shillings to relocate the dumpsite to Ruai as proposed in the Nairobi masterplan. Of course, we all know that some people at the top especially the politicians will not only embezzle the funds, but are also interested in the 3000 plots of land that has been covered in waste for years- of course you

know that land is an expensive deal in Kenya. There have been about 18 reports written on how this dumpsite can be relocated with nothing done eventually. It's just unnecessary…

Right now, we have not started working on the 'big project' [main dumpsite] although some people have started sorting plastic bags on the dumpsite. All we need is the government to provide us about 2-3 recycling machines and bulldozers. With minimal interference from the government we shall employ everyone interested in this project, up to about 3000 youths. We the community members can take charge of the dumpsite if given the full potential and resources" (Leader, Dandora CBO. Interview 1).

In sum, instrumental, communicative and transformative outcomes have been recognized in at least 11 of the 12 the participating CBOs-pictures and summary of outcomes are presented in Figure 8 below and Table 12 above. As well, community teamwork, cooperation, empowerment, and income generation through self-employment and job creation were some of the key sub-themes identified in responses of all 12 CBOs involved. The next section describes what improvement opportunities of waste disposal systems exists in the communities, how information can be reached to the public, and whether thoughts on establishing sustainable disposal systems were reflected in the SEA cases.

(A)

(B)

(C)

(D)

(E)

(F) 

Figure 8: (A) Recycled Bags; (B) Recycled back packs; (C)Seedlings in recycled plastic cups; (D) Animals carved from Flip-flops; (E) Cooking gas from human waste; and (F) Electricity from Cow dung (Source: Patricia Ozoike, Kenya 2015)

6.5 Thoughts on Boosting the Effectiveness of CBOs, Local NGOs and Informal Waste Collectors

Of the 12 participating CBOs, 11 agreed that most communities not only lack functional waste management systems, but are also crippled by poor road networks, poor regulations and limited technology, which in turn impact the operational effectiveness of CBOs and informal waste sector operation in Nairobi and Kenya in general. When asked what improvements are needed to ensure more effective and efficient waste disposal system in communities, 6 CBO participants maintained that although the waste management hierarchy has been established in Nairobi, there should more awareness about waste sorting, recycling and marketing in every neighborhood and community affected by waste management problems. The leader of the Kibera Recycling Group stressed that given many CBOs are already involved in recycling and recovery of useful resources

from waste, awareness in terms of marketing of the recycled products must also be created to encourage interested buyers and to motivate all CBOs involved.

> "…. We can make Nairobi a green city again as it used to be in the past provided we CBO groups can be given a voice. The most important issue to us that we discussed in the [SEA] meeting was marketing. We would like them to encourage market for our locally recycled items, this in a way will encourage us in producing more useful materials from waste such as beads, baskets, bags, earrings and other useful items. We discussed these issues in the meeting and they [consultants] responded positively" (Leader, Kibera CBO. Interview 2).

A woman in charge of Maringo Compost in Makadara community described her privately owned CBO as stressful but fulfilling. She owns a poultry farm where chickens are raised, and runs a barn where goats, rabbits and Guinea pigs are bred. She collects animal droppings and piles them up in compost heaps at her backyard. Food waste collected as animal feed remains are also added to the compost heap. By turning over the heap compost biweekly, she ensures that the heap is thoroughly decomposed, dried, bagged and ready to be applied to her garden or sold as organic manure to the local farmers. However, marketing is a major challenge for her since many city occupants are often too busy to farm, or the existing farmers are not aware that there is a cheaper and safer source of crop nutrients that can boost farm yield.

> "I also use the composted manure on my garden here in Nairobi… as you can see the soil on the garden is dark in nature, it means it has been mixed with the black composted manure which indicates increased fertility of the soil. Once I plant *Amaranthus* and *Sukumawiki* [Kale] vegetable on the garden, they come out fresh and tastier than the inorganic enriched vegetables…
>
> Sometimes I do not get enough marketing in Nairobi. That is one my greatest challenge… I find it really hard especially when you make heaps of compost hoping to get buyers, no one turns up to buy them, I feel so discouraged. But again, I told myself instead of waiting for buyers in Nairobi, I'd rather go back home and market my compost, or better still cultivate with it on the piece of land I inherited from my father… Right now, I cultivate tea, coffee, banana, and plantain. I use my composted organic fertilizers and it has increased the market value of my produce" (Maringo Composting Leader. Interview 7)

From an environmental point of view, composting is one of the best methods of harnessing organic matter from biodegradable waste. However, many large and small scale composting enterprises have not recorded much success owing to less attention being paid to the marketing opportunities as well as the value of the product being marketed (Zurburgg, 2008; Henry et al, 2006). Apart from creating a market, provision of adequate funding support, training and capacity were also some of the key factors to be strengthened to boost the effectiveness of CBOs and the informal waste sector in Nairobi. One of the representatives of the Kibera, Dandora, Korogocho and Makadara CBOs pointed that although most CBO groups are duly aware of the benefits of cleaning the drenches, recycling, and overall environmental protection, most members still require proper training and skills, and capacity development to function more effectively.

> "For improvements, we need more trainings for members to know their rights when it comes to making money out of waste materials. So many people are aware of the benefits but lack capacity. But when there is more trainings and capacity in terms of hand gloves, wheel barrows etc., and especially providing a legal go-ahead for community group like ours, we the members will be able to defend ourselves while advocating for environmental protection through waste management …" (Representative, Kibera CBO. Interview 2).

> "Look, everyone is now aware that you can plant trees, clean up the drainages, and engage in other environmental activities. We need capital in form of capacity so that we can be able to buy more equipment that will enable us produce large quantities of recycled bags. With that, we are reducing the volume of plastic bags that will go to the dumpsite. All the waste should not go to the dumpsite…no! Waste should be converted to useful products" (Representative, Kinanie CBO. Interview 11).

> "Since the inception of this group, we operate majorly in informal settlement, now we are trying to spread out to the high income residential areas. This means that we need more capacity, more trucks and perhaps more capital. Sometimes we compost, but we stopped because of lack of space. Now we do it in small quantity…we dig the ground, fill with leaves and food waste and other perishables. We turn it over every two weeks and when its ready, we add them to our *shamba*…very good for growing *sukumawikis* [Kale vegetables]" (Representative, Dagoretti CBO. Interview 3).

For women-based CBOs like the Makadara composting and Korogocho Smart Women group, the leaders stressed the need to provide women with enough skills that will encourage and motivate them. In their minds, women are often viewed as weak and incompetent especially in terms of initiatives like material recovery and waste management. However, to further prove that their CBOs are worthy of the values preached, more trainings, workspace environment, and financial support are essential to enable them recruit as many interested women as possible to join in the combat of waste management through their recycling initiatives.

> "Another challenge is capital. For a women-based group like this we need enough capital to run our group. We need to buy more sowing equipment to enable us produce bag packs in large quantities and also be more creative in other areas. We also need more trainings for our women. I have attended only one training so far which was sponsored by a Japanese representative…We need better trainings for our women both new and old. This will enable them to be more productive in the craftworks. We women should not be seen as weak or incapable. The trainings will also help us share ideas within ourselves, we learn from ourselves, encourage and motivate one another through the trainings" (Representative, Korogocho CBO. Interview 6).

Many other participating CBOs responded similarly, describing the need for more skill, training and capacity as a platform to effectively combat the waste management challenges faced by many communities in Nairobi. Another key discussion that was common among the participating CBOs and that was raised in the SEA meetings was how information on waste management could be brought to the public in an effective way, especially through SEA. All 12 CBOs interviewed gave one common answer- effective public awareness. Responding to this issue, 5 CBO representatives acknowledged that education and awareness creation through SEA not only helps convey the knowledge and skills that will meaningfully contribute to effective waste handling and management in Kenya, but also is capable of changing citizens' attitude directed toward more positive behavior. The leader of the Kibera CBO recognized the role of media, that is, local radio and television stations as very important players. Since many people listen to the

local news or programs in Kiswahili, airing some of the communities' waste recycling projects will make people become more aware, and of course enhance people's interest in reaching out to patronize and encourage CBOs involved in waste recycling activities.

> "We are also in partnership with the media in Kibera community [Kibera Radio Station-Pamoja FM]. We sometimes present some of our community activities to this radio station for people to have a sense of what we are doing. This has worked really well for us here in Kibera. People are gradually getting aware of the benefits of recycling and reusing but we need more market and awareness for our recycled materials" (Leader, Kibera CBO. Interview 2).

> "Effective public awareness will go a long way. Most people know the health implications of waste but some do not know that there are huge benefits associated with waste. Apart from keeping the environment clean, there are financial benefits that can be derived from waste materials. Once communities are educated on this aspect, especially through the meetings [SEA], I believe there will be drastic changes on people perception about waste when the media is more involved…" (Leader, Dandora CBO. Interview 1)

One of the Kawangware CBO members thinks that apart from media, kids should also be involved in waste awareness campaigns, and waste management module should be incorporated in their course curriculum. According to him, involving kids early in waste related activities especially sorting and recycling, also being the most difficult waste handling process in Nairobi, will teach the kids to be more environmental conscious which will eventually become easy for them to cope with any waste challenges they might encounter in their communities while growing up.

> "Apart from being made public through the internet, they can also come up with new approaches to involve the kids. I have realized that in any proposed agenda for change in any community, you must involve the kids. If you train the kids especially by putting waste management module in their school curriculum, they grow up to live it, they also train their own children and it keeps going on and on. Women are also willing to change, they are hardworking but like I said If you start out waste management campaign with grown adults and not involving the kids, the change you desire might not be effective because it is very difficult to dictate to adults whereas kids are very easy to groom" (Leader, Kawangware CBO. Interview 13).

Religious and faith-based groups were also recognized as one of the best media on getting information to the public. Two representatives of Dagoretti and Kinanie CBOs think that many religious groups are not just becoming more environmentally aware, they now also engage in various environmental-friendly activities like tree-planting, birding, environmental protection and conservation, and waste management. Thus, involving these faith groups are an effective way of making the public aware of material recovery and other recycling initiatives of various CBOs.

> "Information can also reach the communities through churches and mosques. Most of the churches engage communities in nursery and seed planting, drainage cleaning, bird protection…sometimes water conservation through water mapping exercises. So, I think they also have a big role to play in getting information on effective waste management to the public…" (Representative, Dagoretti CBO. Interview 3).

Finally, the last phase of interviews conducted with CBOs and self-help groups was regarding how safe and sustainable waste disposal system regarding collection, sorting, recycling, reuse, trade of waste and transportation within affected communities can be established. 10 of the 12 CBOs acknowledged that sustainable waste management systems can only be established and implemented through urban related masterplans like NIUPLAN and KLIP. Moreover, since the main aim of public participation in the SEAs is to gather public input in reaching safe waste management systems, communities should also be equipped with adequate resources and competence capable of implementing commercial-level integrated waste sorting, collection, recycling, recovery, composting and transportation to designated landfills.

> "Our thoughts are that in future we hope to have a company/industry that can produce manure fertilizers in large quantities. We also hope to have a recycling facility where not only plastic materials and other non-biodegradables will be recycled in commercial quantities, but also where most of Kibera community members will be employed to work. If we can get a licensed transportation mechanism such as lorries and trucks, collection will be very easy for us. So, collection, recycle reuse are all what we advocate for as the best ways

to make money from wealth. We discussed them a lot during the meetings" (Leader, Kibera CBO. Interview 2).

"Yes of course, once we can get the waste recycling machineries in our community, especially through these assessment meetings organized by the city county [NIUPLAN SEA] it will not only serve us now but will also be useful in the future, and by the time you realize it, Dandora dumpsite will be totally cleaned up..." (Leader, Dandora CBO. Interview 1).

"Collection, sorting, recycling are the best ways to manage waste in Kenya, but not until there is enough capacity and resources to handle it. Landfilling-such as the case of Dandora is not a good way to manage waste because waste don't decay especially without sorting. It also causes underground pollution. Our *shambas* will be in serious trouble if we continue landfill waste. Let me say it can only be possible if only food waste is buried, but we do not sort our waste therefore landfilling is not a good option for now" (Leader, Dagoretti CBO. Interview 3).

Most of the responses documented from the CBO representatives can be likened to those found in the SWM literature. For instance, Parrot et al., (2009); Henry et al., (2009) and Okot-Okumu (2012) argued that the involvement of CBOs, NGOs and other private waste collectors is essential in improving the overall management of solid waste in bigger cities in East Africa like Kampala, Dar es Salaam and Nairobi. In addition, involving the CBOs in SWM without providing them with adequate economic, institutional framework, technical and operational capacities will not further cripple the waste sector but also may lead to a lot of waste to remain uncollected or improperly managed thus increasing the health risks of affected communities (Okot-Okumu, 2012; Rotich et al., 2006). Furthermore, Imam et al., (2008) stressed that there is a general low level of public education and awareness in many African cities regarding waste problems, which has resulted in huge volumes of waste being dumped at inefficiently managed land disposal sites. Thus, bringing information about sustainable SWM systems to the public through SEA, media, public health fora, religious organizations, and through other legislative means have been found to cause improve the roles of CBOs. As well, a positive change in the overall citizens' behavior and

perception about waste management can be achieved through cooperation and more responsible actions evidenced in some developed cities and countries (Zurbrügg, 2008; Selma, 2013).

6.6 Reflecting the Advantages and Disadvantages of the Ideal Conditions of Learning in Relation to Participant Learning Outcomes

The ideal conditions of learning have been used to consider participant learning outcomes in relation to public participation in EA/SEA (e.g., Sinclair and Diduck 2001; Walker et al., 2014; Walker et al., 2016). In this section, the advantages and disadvantages of the learning conditions established through previous research are explored in relation to how they influenced participants' learning outcomes in the 2 case studies. An overview of the results is captured in Table 14.

Table 14: Summary of the Advantages and Disadvantages of the Learning Conditions in the Two Selected Cases

NIUPLAN SEA		**KLIP SEA**	
Advantages	**Disadvantages**	**Advantages**	**Disadvantages**
Freedom from coercion and manipulation	Inaccessibility of SEA documents	Freedom from coercion and manipulation	Inaccessibility of SEA documents
Integration of socio-economic concerns	Poor public notice of the SEA meetings	Integration of socio-economic concerns	Poor public notice of the SEA meetings
Equal opportunity to actively participate	Poor funding opportunities		Lack of inclusion of the most affected public
Inclusion of the most affected public	Late timing of the SEA		Poor funding opportunities
Ability to reflect on presuppositions	Lack of feedback		Late timing of the SEA
			Lack of feedback
			Lack of opportunities for active participation

Although variable strengths and weaknesses of public participation in the 2 cases have been identified, neither cases fulfilled the type of participation associated with the ideal conditions of learning that would have best ensured learning outcomes might occur. More so, while several instrumental, communicative, and transformative outcomes were common among participants, deviations in the ideal conditions were noticed in some participants who recorded little or no learning outcomes.

In the NIUPLAN SEA case, learning outcomes were evident among almost all the participants and CBO groups, probably because sufficient information was provided to many participants, plus there was a wider scale in terms of PPP area coverage, and robust logistics on plan process resulting in participants being actively engaged in the SEA and waste management plan. Conversely, learning outcomes recognized in the KLIP case were limited partly owing to insufficient information about the proposed Leather City and largely owing to what many of the participants referred to as being 'the controversial project'. Also, absence of learning outcomes among KLIP participants could also be attributed to the exemption of essential ideal conditions or multiple deviations resulting from poor SEA consultations. For instance, although there were water mapping activities initially organized by the KLIP SEA consultants to create plan awareness through scoping, and to engage host community members in preparation for consultations, when it was time for participation proper, many community members were either notified very late or were not invited at all.

While a careful consideration of socio-economic and environmental benefits and impacts of the 'Leather city' was a major strength noticed in the KLIP SEA, grass root community members including women, youth, and facilitators such as CBOs, charitable organizations, NGOs and welfare societies were missing during the validation meeting. Rather, community elites and

government stakeholders were the only participants involved in validating the SEA activities that were meant to be vetted by the community members who are likely to be the most affected. Although women, youth and CBOs participated in the screening, scoping and detailed study of both SEA cases, which was considered a key strength of participation in chapter 4, validation requires the presence of those same community members to agree and validate a project they have been initially part of. Spaling et al., (2011) and Walker et al., (2014) documented a similar trend in their studies of EA in Kenya in which they discovered that EA Consultants had invited top community leaders for participation, primarily because they were the most informed or they have direct interests in the process, thus creating a power imbalance that largely excluded the poor and women from the EA process.

Other ideal learning conditions not met included incomplete access to information, insufficient SEA education, late notice, and poor communication and a resulting lack of transparency. For instance, although the KLIP participants seem to be generally knowledgeable about EIA of the new Leather City, however, being provided with very little information about the purpose of SEA as well as poor notice of meetings resulted in participants' inability to attend most of the consultation meetings. Thus, apart from limiting the chances of participants to constructively engage in dialogue that might change their underlying perspectives, false hopes that the project might breach trust agreements between community members and the proponents was further raised. This again corresponds with previous studies (e.g., Walker et al., 2014; Walker et al., 2016) where incomplete access to SEA documents, late notice and lack of communication exempted distant community participants, but also limited meaningful public participation and learning.

Another deviation in the ideal condition of learning in the two selected cases, which might also discourage a lasting transformation is the late timing of SEA and lack of dissemination of

results to participants. These failures were common in both cases as most participants thought that the draft report was already finalized before inviting them to contribute, greatly limiting their ability to affect the outcome, and that there was no communication of final outcomes of the consultations, thus, it was unknown to them if their concerns were addressed or inputs utilized. Although the draft SEA reports indicated that public concerns were documented and input utilized, the lack of communication and sharing of findings with the public created skepticism and raised eyebrows among participants about the authenticity of the overall process. In the case of the Leather City for instance, it led to feelings of lack of inclusion or incompetence of local communities in influencing decisions. Possible social actions were also impeded as noticed by some Kinanie women groups who had thought about locally recycling leather by-products on the plan site. However, since they have not gotten any feedback from the meetings where they had suggested these ideas, the women responded that they might likely discontinue with their intentions as they were not sure if the suggestions were welcomed let alone captured. When feedbacks through pictures and posters are presented to participants, assurance, and strength needed to implement the EA plan process are not only strengthened but are more likely to ease the monitoring and follow-up procedures (Spaling et al., 2011; Walker et al., 2014).

Nonetheless, the key strengths noticed in both SEA cases such as freedom from coercion, inclusion of marginalized people, addressing socio-economic consideration in the SEA, and opportunities for active participation and opportunity to reflect on presuppositions did support the ideal learning conditions. For instance, learning new recycling skills, drainage cleaning, garbage collection, and planting of trees and flowers were some of the skills learned during discussions with facilitators and other community participants, and have been implemented by many participants and CBOs since attending the SEA meetings. These skills learned not only have the

possibility of piloting positive environmental and social action by either reducing the amount of waste dumped at Dandora or alleviate effects of waste on community health, but could also increase the livelihood and survival opportunities of the poor through local job creation, empowerment and sustainability. Moreover, Walker et al., 2014 and Spaling et al. (2011) argued that participants who learned new skills applied them to themselves and their communities which eventually affected their overall positive thinking about the environment.

In addition, the incorporation of ideal learning conditions facilitated several communicative learning outcomes in many participants and CBOs members involved in the two SEA cases. Reflective discourse led to interactive deliberation and sharing of viewpoints among different community members. The ideas shared among groups increased deeper understanding of issues facing each other's communities, leading to creation of many working groups and team actions developed to boost relationships that can help achieve sustainable goals for the common community good. After participating in a CBEA, participants developed new viewpoints and informed others thus promoting stewardship, community unity, and other new behaviors that have resulted in environmental sustainability (Sims and Sinclair, 2012; Spaling et al., 2011). Transformative learning outcomes documented in this study resulted from both the instrumental and communicative social actions of participants in the two cases. For instance, most CBO leaders and members engaged in drainage repair, water conservation, community tree and flower planting or group waste recycling activities and recorded huge transformation in their meaning perspectives. Most importantly, participants who led by example not only developed the ability to transform as many other members as possible, but also created more opportunities to motivate and empower many by influencing decisions and creating a zeal for more participation next time.

Findings from this research can be likened to results from other EA studies in Kenya (e.g. Spaling et al., 2011; Mutui et al., 2013; Walker et al., 2014; Walker et al., 2016). For instance, key strengths of participation identified such as inclusion of the marginalized, addressing socio-economic components, opportunities for active participation, and opportunity to reflect on presuppositions are consistent in that participants especially the vulnerable, were not only availed the opportunity to be included in decisions they are often excluded from, the opportunity also gave them more prospects of influencing final decisions. In terms of public participation weaknesses, findings from this study also conforms with results from other EA studies mentioned above. Incomplete access to information, late timing of SEA, insufficient SEA education, late notice, and lack of dissemination of results limited meaningful public participation and discouraged positive learning outcomes of participants, resulting in an EIA-type SEA process and reporting (e.g., Walker et al., 2015; Walker et al., 2016; Mutui et al., 2013). Participants from both SEA cases were involved very late after the masterplans were drafted, hence giving them little or no opportunity to make significant changes to the final outcomes. This, coupled with lack of access to SEA documents and poor feedbacks impacted and resulted in participants to question the transparency and accountability of the entire planning process (Walker et al., 2015; Walker et al., 2016) leading to a compromise in the originality of the SEA process itself (Mutui et al., 2013).

Despite the above-mentioned consistencies with other studies, results from this study differ from others in 2 key ways- partial understanding by participants of the meaning of SEA, and freedom from coercion and manipulation. For instance, some NIUPLAN participants indicated not only hearing the word “SEA” the second time, but also thought that the SEA discussions presented by the facilitators during the meetings was valuable since it has availed them the opportunity to learn the ‘strategies’ involved in environmental planning. Other participants indicated that they

have adopted key environmental and conservation techniques since attending the meetings such as planting of trees as a source of shared oxygen, heating of water in the sun to conserve energy, and so on. In terms of freedom from coercion, all interviewed community participants pointed that they were able ask questions and contribute meaningfully during the SEA meetings, and that the presence of community elites and other government stakeholders posed no restrictions when expressing their concerns. These are positive improvements discovered within the Kenyan SEA practice that can be further strengthened if SEA facilitators can incorporate the key education components recommended in NEMA's SEA guidelines and curriculum during public consultation process.

6.7 Chapter Summary

Learning outcomes of participants in relation to the ideal conditions recorded varying degrees of advantages and shortcomings, resulting in mix instrumental, communicative and transformative results in both the NIUPLAN and KLIP SEAs. The NIUPLAN SEA facilitators incorporated major key learning conditions such as freedom from coercion and manipulation, equal opportunity to participate, addressing socio-economic aspects, inclusion of the most affected public, and ability to reflect on presuppositions, facilitating positive individual and social learning outcomes among participants and CBOs (Table 14). Opportunities for positive learning outcomes were limited among the KLIP participants owing to multiple deviations from the ideal conditions of learning, that is, poor public notice of the SEA meetings, inaccessibility of SEA documents, poor funding opportunities, late timing of the SEA, and lack of feedback. Although NIUPLAN SEA facilitators did not meet all ideal learning conditions, however, availing participants the opportunity to participate in discourse, and critical reflection on values and beliefs in relation to the plan process facilitated constructive instrumental and communicative results that eventually

led to transformative learning of participants. As a result, many participants including CBOs and local NGOS have engaged in many sustainable social activities as part of the overall learning experience.

The inclusion of CBOs, Self-help groups and Local NGOs also played a major role in the overall positive waste management outcomes in many communities in Nairobi and Kinanie. Of the 12 CBOs involved in this research, 9 shared their transformative stories in relation to how they have emancipated and taken actions that have, and will continue to benefit their communities. Despite growing positive attitude among communities and groups towards waste management, there are mounting challenges such as marketing, financial, institutional and technical capacity, and public awareness needed to be surmounted to boost the recycling prowess of these groups. Also, to get people informed about sustainable waste management, representatives of the CBO groups acknowledged that effective public education through the media, religious and faith-based groups, and incorporation of ISWM module into high school curricula will not only inform the public of integrated waste collection, recovery, recycling and composting ideas, but also will result in positive change in behavior of many community members. This will likely increase the hopes of tackling the increasing waste problems facing the city for many years. In the next chapter of the thesis, a summary of findings from this research in relation to the four objectives of the study are presented. As well, recommendations are developed with a view to incorporate SEA, public participation, learning and the roles of CBOs and informal waste sector in achieving a meaningful waste management goal for the benefit of developing countries like Kenya.

7 Conclusions and Recommendation

7.1 Introduction

Solid waste management is prominent and pressing environmental concern facing most developing countries in Africa owing to rapid urbanization with little or no existing technology for handling the increasing volume of waste generated (UNEP, 2012; OECD, 2012). In Kenya, many communities are confronted with inefficient waste collection, transportation and environmental-friendly disposal systems to manage at least 40 to 50% of all solid waste generated in urban areas (Gakungu, 2011; Mwanzia et al., 2013). Owing to the global demand for more effective SWM systems with emphasis on recycling, energy recovery, and pollution control, integrated solid waste management (ISWM) has been established as a more sustainable planning approach to reduce waste through a cost-effective system (UNEP, 2013). ISWM ensures that solid waste is properly handled based on the '4R' hierarchy-reduce, re-use, recovery and recycle with the main aim of preventing the potential impacts of waste on human beings, plants, animals and the environment in general (UNEP, 2012; Hoornweg and Bhada-Tata, 2012)

SEA has been recognized as an instrument that can advocate enhanced planning in part through implementing meaningful public participation early in regional and other plans that may include large scale waste management facilities such as in engineered landfills and incinerators that might be part of a ISWM program (Arbter, 2005; Dermol and Kontic, 2011; Dennis and Agamuthu, 2013). SEA has been known to encourage the sustainability outcomes of PPPs of developmental initiatives in developing countries like Kenya, particularly in the analysis of various options for SWM management during an SEA often considered as EIA-type mitigation measure assessment for an already chosen PPP (Therivel, 2010; Alshuwaikhat, 2005). In addition, as an important component of SEA, public participation ensures that communities, especially the ones

likely to be affected by proposed PPPs are involved in higher-level decision-making processes. Through such processes, voice can also be given to the marginalized sections of society, increase the transparency of decisions, practitioner-public trust, and ensure sustainability-based individual and social learning outcomes (Sinclair et al., 2008, Heiland, 2005). To date, more than 40 SEAs have been completed in Kenya but the practice is still evolving, while ample opportunities still exist to further assess its implementation (NEMA, 2012; Walker et al, 2014).

Of these 40 completed SEA cases, about 8 were related to urban and city planning, 2 of which were selected for detailed analysis based on availability and willingness of participants, that is, the Nairobi Urban Integrated Plan (NIUPLAN) and the Kinanie Leather Industrial Park (KLIP), also known as the 'Leather City'. The purpose of this research was to explore how SEA is being used as a tool for future planning in relation to participatory SWM in Kenya. The objectives of the study were; to evaluate completed SEAs against standard SEA practice, and best practice solid waste management procedures; to examine the extent of participation in the SEA process, and in the resulting SWM plan; to document participants' learning outcomes about SEA and SWM as a result of their involvement in the SEA process; and, to make recommendations for any needed amendments to SEA process in Kenya and the incorporation of best practice SWM in new developments.

A total of 40 participants including SEA consultants, proponents and government officials, local community members, CBOs, Local NGOs and Self-help groups were invited to participate. SEA documents reviewed at the initial stage of the study helped to set the context of the cases to be selected while identifying key participants to be interviewed as established in Chapter 3. Interview questions were developed in accordance with the study objectives and in relation to the literature reviewed about SEA, SWM, public participation and learning, and was conducted at

participants preferred locations. Field visits in form of participant observation was also conducted to observe ground waste management of local recyclers, CBOs and self-help groups, while focus groups discussion was organized to validate results obtained from other data collection methods. Conclusions related to each of the objectives based on the data collected are summarized in sections below.

- **To Evaluate Completed SEAs against standard SEA practice**

Although SEA and SWM in Kenya have recorded significant progress in practice, the data and the literature reveal noticeable disparities compare to best practice (e.g., Therivel, 2010; Fischer and Gazola, 2007, UNEP, 2012; NEMA, 2012). The first conclusion is that only 2 of the 5 reviewed SEA documents incorporated public participation, rigor and sustainability components into their baseline, scoping, detailed study, monitoring framework and its entire planning process. Secondly, evident weaknesses include weak SEA public education and awareness, supplementary capacity and training of SEA experts, EIA-type SEA reporting, and poor public consultations. The SEA performance criteria developed by Fischer and Gazzola (2007) also revealed that although SEA is evolving in Kenya, irregularities still lingering within the SEA system is majorly on public involvement, SEA reporting and follow-ups through monitoring. Other studies also recorded similar weaknesses (e.g., Walker et al., 2014; Walker et al., 2016; Spaling et al., 2011) and as noted in the literature, weaknesses in SEA not only impede smooth implementation of proposed developments but also act as barriers for long-term sustainable actions on such developments (Therivel, 2010; Fischer and Gazzola, 2007).

In terms of solid waste management, most of the reviewed urban SEA documents incorporated the ISWM approach also presented in the Kenyan Solid Waste Management Strategy as the best

practice SWM (NSWMS, 2015; NEMA, 2015). The NSWMS proposed that for bigger cities like Nairobi, Mombasa, Kisumu and Eldoret, waste prevention campaign should intensify, however, reduction, recycle and recovery systems that can effectively manage high waste volumes generated in these cities should be proposed in any SEA plan. It was, therefore, concluded that waste prevention as well as the 4Rs in form of material recovery facilities (MRFs), will be stablished in during implementation of the SEAs with emphasis on establishing CDMs for KLIP SEA and MRFs for the NIUPLAN SEA that will replace the open Dandora dumpsite that has created many health problems for inhabitants over 3 decades. Conclusively, although SWM components of the reviewed SEA cases were identified as recommendations for best practice SWM in the new developments, there are however acknowledged opportunities for many existing self-help groups, CBOs, and individuals that engage in ground waste handling and recycling. Thus, SWM components of the reviewed SEAs proposed improved effective CBO capacity and skill building for adequate waste collection and transportation in NIUPLAN SEA.

- **To Examine the Extent of Participation in SEA, and in the resulting SWM plan**

Reviewed SEA documents coupled with interview responses from SEA consultants and participating NEMA and other government officials indicated the type and categories of participants involved and stages they were involved in, techniques and methodologies utilized during consultations, and benefits of public participation such as increased community-practitioner relationship, owning of projects by the public, and traditional ecological knowledge (TEK). The first conclusion is that the two SEAs recorded different levels of performance in public participation – the Nairobi case doing a much better job of engaging the public based on the data and documents. Secondly, both SEAs revealed challenges that impeded enhanced benefits of public participation including language barrier, inadequate public education and awareness,

ambiguity of the SEA process and the adversarial method of seeking public input in Kenya. To assess public participation process within the Kenyan context, six ideal conditions were described and developed with indicators (Mezirow, 2000; Sinclair and Didcuck, 2001). The third conclusion, therefore, is that the six conditions depicted notable variabilities in strengths and weaknesses of participation. Key strengths identified were freedom from coercion and manipulation, equal opportunity to participate, addressing the socio-economic components, inclusion of the most affected public, and ability to reflect on presuppositions and accept consensus as valid. Although not very evident in the draft SEA reports, some of the weaknesses acknowledged by majority of the participants include poor public notice of the SEA meetings, inaccessibility and low retrievability of uploaded SEA documents, late timing of the SEA, hence limiting the inclusion of the public into early strategic PPP discussions. Other shortcomings of the participation process include poor participant funding package, poor communication and feedback programs, and lack of clarity and transparency.

- **To Document Participants' Learning Outcomes about SEA and SWM**

Incorporation of the key learning conditions facilitated positive individual and social learning outcomes among participants and CBOs in the NIUPLAN SEA, with 4 conclusions drawn to meet this objective. Firstly, participants including CBOs and local NGOS have engaged in many sustainable social activities as part of the overall learning experience. Tree-planting, drainage restoration, water conservation, waste collection, recovery, and recycling are examples of social actions resulting from participants instrumental learning outcomes. Secondly, in terms of communicative learning, interaction and sharing of ideas with other community members, community waste cleaning activities, team-bonding activities and communal learning were evident among participants including CBOs, local NGOs, and Self-help groups. Thirdly, some individual

participants and most of the CBO leaders involved recorded obvious transformative learning outcomes in terms of becoming more aware and self-reflective of their community/backyard waste activities, leadership roles by example, personal care, and faith-infused transformations.

Opportunities for positive learning outcomes were limited among the KLIP participants owing to multiple deviations from the ideal conditions of learning such as, poor public notice of the SEA meetings, inaccessibility of SEA documents, poor funding opportunities, late timing of the SEA, and lack of feedbacks. Although many participating CBOs and local NGOs acknowledge their learning outcomes and consequent social action as part of their involvement in the SEA meetings, however, the fourth conclusion here is that there are loopholes needed to be filled in other to boost the efficiency of CBO operation in Kenya. Marketing opportunities, financial incentives, technical and capacity building, and public education and awareness are the key challenges to be tackled to enable CBOs to thrive in their waste management initiatives. Finally, to get the message of proper waste management to the public, the media, religious and faith related organizations are not only identified as the major players, but also, rolling out ISWM module into secondary and post-secondary institutions would also create an early awareness and imbibing of positive waste attitudes in school kids.

7.2 Recommendations

Here, overall interview responses from SEA experts as well as constructs from SEA and SWM literature helped to develop recommendations each to address the gaps of SEA and SWM in Kenya, with a view to improve their practice as well as contribute to the existing SEA and SWM literature. In terms of SEA and public participation process in Kenya;

7.2.1 Access to SEA information

This is essential prior public consultations because not only does it ensure that all participants are fully prepared and equipped to participate, it also creates an enabling environment for participants to meaningfully contribute to all discussions raised at the SEA meetings. In addition, all the results and events from SEA consultation meetings must be disseminated to the participating communities. In the 2 SEA cases, reports and minutes of meetings were uploaded to the internet to capture public views and comments, however, many of the local participants are either less-educated or do not have the means to access large files online. Such abstract information should be summarized and properly translated to local and understandable languages (e.g., in Kiswahili or braille for the blind) as well as through posters and pictographs before handing over to the community leaders who will eventually distribute to the community members. Spaling et al., (2011) and Okello et al., (2009) also argued that the use of local radio and telecommunication stations, and pictures with labelled descriptions are a proper way to relay key results from EA to the community participants. This not only improved participants grasp of the content of the outcomes presented to them, it also facilitated positive learning outcomes that resulted into sustainability.

7.2.2 Communication and Early Notice

Consistent communication with community participants is also a key recommendation to SEA facilitators. As experienced by many participants in the KLIP SEA for instance, lack of communication resulted in participants' uncertainty and distrust about the leather city, resulting in limited positive learning outcomes of participants. Also, since EMCA has assured citizens the right to information, and since SEA is a repetitive, time-intensive, and rigorous process, time-to-time updates of plan information with community members and involvement of more community

representatives at the validation workshops would improve the community-proponent trust while alleviating the existing project-related controversies lingering within the community.

Furthermore, providing early notice of meetings and prompt follow-up with participants is an important aspect of communication that can boost effective public participation. Most of the interviewed community participants from both cases argued they were not given enough notice. They pointed that ideally, if they had enough notice, they would have extended the invitations to other key community members who lived far from the meeting locations, and that are likely to raise meaningfully suggestions to key issues raised at the meetings. As suggested by some participants, information relayed through community heads are more trusted. Therefore, SEA facilitators should embrace this system of communication by providing a detailed summary of meeting agenda to the chiefs at least 4 weeks prior to the meetings. This gives the head chiefs enough time to reach out to every member in form of *barazas*, to discuss the probable issues pertinent to the PPP, and to come up with questions for the SEA facilitators.

7.2.3 Adequate Compensation

Although most of the interviewed community members responded that they were satisfied with the lunch and tea breaks provided them during the consultations, proper funding opportunities in form of transportation compensations especially to poor and deprived KLIP community participants would have very likely increased the number of people willing to participate. Rather than being a signal of somehow trying to influence people's input, or how genuine that input is, fair and transparent access shows that organizers place a real value on getting people involved. Also, the NIUPLAN participants equally got refreshments during the meetings however, one of the SEA facilitator mentioned that although the plan was funded by JICA, funding almost 600 community participants might increase the cost of SEA and limit the effectiveness and

achievability of consultation results. Conducting the validation meetings closer to participants' residences, providing participants' cash compensation for their time, or providing transport fares to distant members were also suggested by some KLIP participants as the best ways to increase representation of local community members in the validation exercise.

7.2.4 SEA Education and Awareness

Educating the public on SEA especially in rural context can also play a role in making SEA and related public participation more effective. This is important considering that not only should the public understand why SEA is conducted, there should also be knowledge sharing on the benefits and consequences of not participating, and how they can meaningfully contribute to final decisions. As pointed out by the participating SEA consultants in the research, though a few of the local community members are familiar with the term 'EIA' however, most of them do not understand the term SEA nor its importance, -my results confirm this. This resulted in the KLIP meetings involving more learned community elites and government stakeholders than the affected local people. Nonetheless, since NEMA's Education and Awareness department have concluded plans on rolling out SEA curriculum into tertiary institutions by 2017, there is need to quickly implement their Education and Awareness program and ensure that they have ways and means to reach local people with the program to create an enabling platform for beginners.

7.2.5 SEA Training and Capacity Building

For an SEA to be deemed effective, SEA training and capacity building is essential. Whether superficial, practical, locally or internationally specialized, SEA training facilitated at these stages not only create capabilities for improvement especially in developing contexts, but also serve a key drive for functional and efficient SEA performance and implementation (Partidario, 2005,

Spaling, 2003). As described in Chapter 4, the pre-training seminars organized for NEMA staff by the UK government and executed by SIDA is a strong indication of improved SEA capacity in Kenya. In addition to the pre-trainings, about 4 NEMA staff were sent to Sweden to participate in the full training sessions organized to make them more accomplished in the field. In addition, interview responses of NEMA's Enforcement and Compliance staff acknowledged that the agency is putting efforts into providing trainings for as much willing staff, internal and external SEA consultants who are interested in becoming experts. However, responses from the participating SEA consultants indicates that although SEA capacity is enabling in Kenya, it needs to be further strengthened. The immediate and lasting requirement, suggested by Okello et al., (2009), would be to enforce the existing SEA institutional and legislative framework and practice, in this case [Amended] EMCA Act 2015, thus, enabling its relevance and use among decision-makers.

7.2.6 Opportunities for Active Participation

Giving participants opportunities to get actively involved in SEA process is key to reaching concrete final decisions. For instance, the NIUPLAN SEA facilitators employed multiple methods such as focus groups, workshops, debates and open fora to involve participants and get their ideas on how Nairobi should be visualized in the next 10years. Youth and children were involved in debates, and provided with maps, writing and drawing materials to achieve various tasks assigned, while adults were given resources to write and give recommendations related to the plan. On the contrary, KLIP facilitators only provided pamphlets relaying brief information about the Leather City. The KLIP participants also pointed that although the consultants did an excellent job by presenting the key plan concepts and SEA objectives through power points, however, information on SEA seemed too abstract for the less educated participants who do not have a basic understanding of EA processes. This not only limited the opportunities for such participants to be

actively engaged, but also reduced the potentialities of learning or transformation. More active participation such as use of debates, maps, and more writing materials can allow for active engagement especially among local participants, while also creating a platform for positive learning results geared towards individual and social actions for sustainability.

7.3 Recommendations for SWM in the Two Case Studies

7.3.1 Waste Separation or Segregation

Separation of waste at source not only ensures long-term sustainable waste management, but also lessens the final amount disposed (UNEP, 2012; NSWMS, 2015). Although not specifically elaborated in the NSWMS, the Kenyan SWM Strategy should incorporate waste sorting at source since it was highly recommended in the masterplans and by the interviewed participants. Most of the waste generated from households is kept together in a bin without separation, making collection and transportation difficult. Waste collected without segregation eventually ends at the dumpsite where scavengers and other waste pickers gather and pick up scraps, metals and plastics to sell for income and survival. These open dump-sorting process not only attract animals and birds, but also exposes community inhabitants to various health risks. Nonetheless, when sorting at household level is encouraged, especially as proposed in the masterplans, it becomes less difficult to collect or transport for subsequent recovery or recycling actions. As suggested by some participants, households should be provided with color-coded bins and awareness campaigns on importance of sorting at source should be coordinated at various household level. In addition, NEMA and the City County government should ensure strict enforcement and impose the three-stream source separation on households and businesses i.e. bio-degradable, recyclables and garbage/waste thereby providing a lasting solution to management of the waste they generate.

7.3.2 Waste Collection and Transportation

Waste generated and properly separated at source must be collected at a designated location for eventual transportation to its destination. Waste collection and transfer stations, especially in informal settlements, should be located within the reach of all community members and should be equipped with colored containers specific to different waste streams that encourages separation. Also, transfer stations must be adequately maintained by consistent pick-ups to avoid spilling of overfilled garbage (UNEP, 2012; NSWMS, 2015). In Kenya, private and informal waste collectors operate at high and low income residential areas respectively, and each collect their waste at stations designated by the county government. However, many participants in this research maintained that waste collected stays at transfer points without collection for days, sometimes weeks. Measures should be in place to ensure regular vehicle maintenance, and ensure complete accessibility of those trucks. In addition, County Government should support informal collectors and enforce strict maintenance regulations, and adequate measures should be put in place to manage any leachate generated from the waste receptacles and collection areas.

7.3.3 Reuse, Recycle, Recovery

Recycling is the next recommended waste management strategy where materials of the same chemical composition are recovered from their parent waste materials such as plastics, metals, glass and paper (UNEP, 2012; NSWMS, 2015). Since the Kenyan NSWMS proposed reuse, recycling and recovery as the some of the best practice SWM, awareness, particularly in segregated communities should be heightened, and groups that have started should be encouraged. This way, recycling is not only seen as a duty but an attitude that can trigger more responsible positive waste handling and management among local communities.

7.3.4 Biogas and Compost Production

Production of biogas from biodegradable waste in form of WTE is currently gaining resonance in many developing cities in Africa (Imam et al., 2008; Njoroge et al., 2005). In addition, reports from the United Nations indicates that CDMs are effective in waste management by not only guaranteeing reduction in quantity of waste but also ensures greener production that can reduce volume of gaseous emissions by more than 50% (UNEP, 2012). In this research, the KLIP SEA will be developing a CDM that will ensure cleaner and resource-efficient leather production. Although the KLIP participating community members viewed CDM as a welcomed initiative, however, strict monitoring and follow-up that will ensure pollution prevention or leaching into the environment must be guaranteed. In addition, some community members proposed that a base should be commissioned on site for local recyclers, such that finished leather remnants from the tanneries can be further recycled locally, to give an end-of -life value to the leather waste materials.

7.3.5 SWM Knowledge and Awareness

The level of education received by the public can drive their will to recycle, recover, or compost (Troschinetz and Mihelcic, 2008; Imam et al., 2008). Most of the local participants mentioned that by participating in SEA, they have not only learned more about ISWM that has helped improve their existing recycling inventiveness, they have also interacted and shared the same knowledge with other community members and members of other neighboring communities. There is a need for continuous program for public awareness campaigns, organized by responsible authorities such as NEMA and the City County, to ensure that an average community member understands the importance of sorting, collection or recycling. In addition, to enable the public to accept the education received, waste bins, colored bags and other waste collection materials should be distributed to community households, and informal waste collectors must be properly trained

and equipped with the skills necessary to achieve integrated waste management goals in local communities.

7.3.6 CBO Training and Capacity Building

With prompt supervision from responsible authorities, CBOs, self-helps and private waste collectors should be adequately equipped with skills and technical know-how, enough workspace at transfer stations to enable them carry out their sorting and recycling activities while mitigating illegal dumping and separation at dumpsites. For instance, many interviewed garbage-collecting CBOs and self-helps in Dandora and Kawangware communities complained that although they train their new members and update themselves with the skills provided by representatives from international NGOs, they, however, do not have functional trucks, and their hand-carts are old and inefficient. This, combined with irregular waste pick-ups from the City County waste collecting department, has resulted in waste remaining uncollected in many local community households. Consequently, CBOs should not only be provided with adequate training, skills and reliable waste collection facilities, but also, equipping them with efficient transportation systems will enable them to overcome the challenges of irregular pickups while achieving the overall success of their waste management goals.

7.3.7 Early Involvement of CBOs in SEA Discussions

Aside from equipping CBOs and Self-help groups with the training about SEA, I recommend that these groups should also be more involved in early PPP and SEA planning and consultations and well before final documentation about options is created. Although there is already a huge amount of knowledge, inventiveness, and creativity that exists within CBOs at the local level, as described in Chapter 6 above, these positive aspects of these informal sector are not

capitalized on if they are only involved late in the SEA process, after key decisions have been made about strategic options. Another important recommendation for decision makers is including grassroots organizations very early in the process will not only ensure that those who are taking giant strides in innovation related to SWM are involved, but also that they can positively influence SEA decisions. More so, recommendations to increase collaboration of the County Government and other responsible authorities with the informal waste sector should also be encouraged, and CBOs, local NGOs, garbage collectors and recyclers must also be involved in public-private partnerships that will improve their livelihood and sustainability (Ahmed and Ali, 2006; Parrot et al., 2009).

7.3.8 Market Opportunities for CBOs

From the interview responses of most CBOs and local recyclers in the NIUPLAN SEA, there is generally a poor marketing system in place to display or sell recycled materials and composted products. Marketing opportunities should not only be designed for recycled materials but also, subsidies and incentives must be created to support informal enterprises (Desmond et al, 2009; Imam et al., 2008; OECD, 2009). In Nigeria for instance, subsidies on imported and local NPK fertilizers were removed, and pricing inflated such that farmers became discouraged, thereby creating more demand for compost manure and other organic alternatives (Imam et al., 2008). Since reports indicate that most of the Nairobi city farmers utilize imported fertilizers, adopting similar subsidy removal initiatives in cities like Nairobi, and providing education on the importance and value of the compost being marketed, will not only create larger markets for compost and other organic waste produce, but will also encourage a positive healthier choice in agricultural yield.

7.3.9 CBO Funding

Lack of funding and capital incentives was a major challenge facing most participating CBOs. The interview responses of most CBOs and garbage collectors indicates that these groups survive only on the money paid to them for collecting household garbage. In addition, these groups use part of the garbage fee to buy new tools, maintain their trucks and carts, and purchase bins to distribute to houses without waste bins. Also suggested by some participants, there is a need to financially supplement the needs of the informal sector by awarding them microloans that will support their contribution to a sustainable ISWM. Since many of them are willing to continue in their quest for ground waste management in their local communities, providing them with financial incentives will not only avail many unemployed youths the opportunities of engaging themselves, it will also increase the likelihood of funding opportunities of World donors like UN Habitat to develop engineered landfills, efficient transfer stations or purchase of new transport systems to willing CBOs.

7.3.10 Regulation, Enforcement and Compliance

Finally, for integrated waste management to be effectively implemented in growing cities, new and existing waste regulations must be enforced. From the researcher's observation of ground waste management activities in Nairobi, color-coded waste bins and waste-tagged billboards are placed at strategic locations in and around the city, however, many city inhabitants still display a lackadaisical attitude by not using these displayed bins correctly. In addition, waste collected in some inner-city locations are seen dumped illegally in people's backyards or by road owing to poor enforcement. Apart from developing a viable waste policy and plan framework for waste management such as NSWMS, the government must also regulate unlawful use of land and impose strict punishment for violators. More so, NEMA, being the sole authority in charge of all

environmental matters in Kenya, must continue to work with other environmental departments and City Counties to ensure that urban related SEA incorporates best practice SWM, and all proposed environmental regulations including the new EMCA (Amended) Act and the NSWMS are strictly enforced and complied to.

7.4 Concluding Reflections

The practice of SEA in Kenya is novel and impressive, especially with the establishment of the new EMCA (Amended) Act. Although the two selected SEA cases reviewed in this research were conducted before the EMCA Act was amended, moving forward, it is now legally binding that all proposed public and private PPPs that might pose significant changes to the environment must be subjected to an SEA. Kenya is considered as one of the countries with leading SEA practice in East Africa, nonetheless, results from this study show that there are ways that SEA could be improved. With increased training, education, and capacity of the SEA institution, public participation will also likely improve in its conduct and practice. As an important tool piece of EA, SEA and environmental planning, public participation ensures that the public are involved in open, democratic, and transparent decision-making processes that can aid sustainable learning outcomes.

In the two SEA cases selected for detailed analysis in this research, six ideal conditions of learning posed by Mezirow (2000) determined if meaningful public involvement was achieved in the 2 cases. The first case, NIUPLAN SEA showed that there was active participation which resulted in positive learning outcomes that led to social actions in participants and CBOs. The KLIP case revealed limited opportunities for active involvement hence little or no positive learning outcomes. In addition, notable key strengths in both cases such as inclusion of the marginalized and freedom from coercion resulted in empowerment and feeling of inclusion in many local participants. On the flip side, failure to incorporate the ideal conditions of learning in the SEA

cases, particularly in the KLIP SEA, flawed the essence the involving the public in matters that affected them the most, resulting in limited positive learning experiences among participants. These challenges are not different from the results of research conducted in EA and public participation literature, in and outside of Kenya (e.g., Spaling et al., 2011; Walker et al., 2014; Walker et al., 2016; Sinclair and Diduck 2001; Okello et al. 2009; Sims and Sinclair, 2012; Gauthier et al., 2011). Reports from these studies indicates that although significant disparities occur in public participation in various contexts, multiple deviations from the assessment conditions can pose a barrier in achieving an overall effective SEA process.

In terms of SWM, results from this study shows that many community participants, CBOs and self-help groups have not only started collecting wastes, recycling, recovery, composting, and conversion of different sorts, they have also become more aware of their roles in promoting sustainable ISWM through SEA. Also, apart from increased job creation, empowerment and income generation, many CBOs have learned to communicate, interact and share ideas together which has helped them to thrive in their various enterprises. However, increase public awareness, capacity and training, funding, and enforcement of regulations will not only improve the roles of the informal sector in waste management hierarchy (Figure 9), but at the same time will avail them more integrated social, economic, and sustainable opportunities. The necessity of advanced solid waste management in Kenya is becoming clearer in part not just to the quantities of waste being generated and lack of adequate management, but also making such considerations ripe for analysis in the SEA context is important and thus providing a wider path for more waste to be turned to wealth.

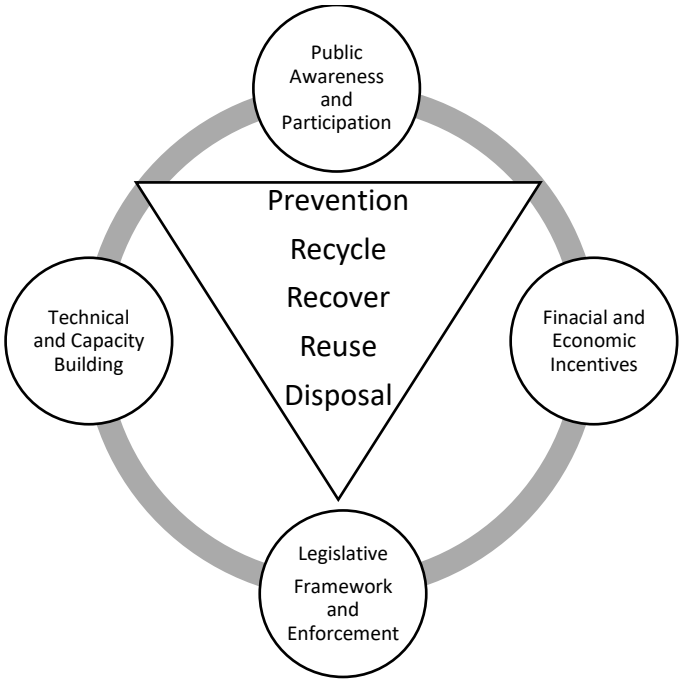

Figure 9: Summary of the Supporting Factors that can Influence the Waste Management Hierarchy to Boost Effectiveness of CBOs in an SEA. (Adapted from SCOPE, 2002)

8 References

Abaza, H., R. Bisset and S. Sadler (2004). Environmental Impact Assessment and Strategic Environmental Assessment: Towards an Integrated Approach, Economics and Trade Branch, UNEP, Geneva. Retrieved 22nd Dec. 2015 from **http://www.unep.ch/etu/publications/textONUbr.pdf**

Abubakar, B.S.U and Ismail, N. (2012). Anaerobic Digestion of Cow Dung for Biogas Production. ARPN Journal of Engineering and Applied Sciences. VOL. 7, NO. 2.

Ahmed, S.A., Ali, S.M., (2006). People as partners: facilitating people's participation in public–private partnerships for solid waste management. Habitat International. 30 (4), 781–796.

Alshuwaikhat, H.M (2005). Strategic environmental assessment can help solve environmental impact assessment failures in developing countries. Environmental Impact Assessment Review 25 (307–317)

Arbter, K. (2005). SEA of Waste Management Plans –An Austrian Case Study. In M. Schmidt, E. João, and E. Albrecht (Eds) Implementing strategic environmental assessment. Vol. 2. Berlin: Springer-Verlag, 3-14.

Arnstein, S.R. (1969). A ladder of citizen participation. Journal of the American Institute of Planners 35(4): 216-224.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. The Qualitative Report, 13(4), 544-559.

Bernard, H.R. (2006). Research Methods in Anthropology Fourth Edition Qualitative and Quantitative Approaches. Altamira Press

Bowen, G.A (2009). Document analysis as a qualitative research method. Qualitative research Journal, 9(2):27

Chi, C.S.F., Xu, J and Xue, L. (2014) Public Participation in Environmental Impact Assessment for Public Projects: A Case of Non-Participation. Journal of Environmental Planning and Management, 57:9, 1422-1440

Conyers, D., Matovu, G., Tevera, D. (2002). The Challenges and New Innovations in Urban Solid Waste Management in Eastern and Southern Africa: Issues and Policy Options, Case Studies in Tanzania, Zambia and Zimbabwe. Working Policy Document, IDRC Canada.

Creswell, J. W. (2007). Research design: Qualitative, quantitative, and mixed methods approaches (2nd ed.). Thousand Oaks, CA: Sage

Creswell, J. W. (2009). The Selection of Research design: Qualitative, quantitative, and mixed methods approaches (3rd ed.). Thousand Oaks, CA: Sage Sage Publications, Inc.,

Creswell, J.W (2014). The selection of research design. Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Thousand Oaks, CA: Sage Publications, Inc., 4th Ed.

Creswell, J.W, Hanson, W.E, Plano Clark, V.L, and Morales, A. (2007). The Counseling Psychologist, 35(2), 236-264 DOI: 10.1177/0011000006287390

Dalal-Clayton, B. and Sadler, B. 2005. Strategic environmental assessment: a sourcebook and guide to international experience. London: Earthscan.

Davidovic, D. 2014. Review: Experiences of Strategic Environmental Assessment in Developing Countries and Emerging Economies – Effectiveness, Impacts and Benefits. University of Gothenburg, Centre for Environment and Sustainability, GMV. Retrieved June 5th, 2015 from **https://gupea.ub.gu.se/bitstream/2077/36241/1/gupea_2077_36241_1.pdf**

Dennis, V. & Agamuthu, P. (2013). Strategic environmental assessment policy integration model for solid waste management in Malaysia. *Environmental Science and Policy* 33 (2013)233–245.

Dermol, U. & Kontic, B. (2011). Use of strategic environmental assessment in the site selection process for a radioactive waste disposal facility in Slovenia. Journal of Environmental Management 92 (2011) 43-52

Desmond, M. (2009). Identification and development of waste management alternatives for Strategic Environmental Assessment (SEA). Environmental Impact Assessment Review 29 (51–59)

Devlin, J.F., Yap, N.T., Weir, R. (2005). Public Participation in Environmental Assessment: Case Studies on EA Legislation and Practice, *Canadian Journal of Development Studies*, 26:3, 487-500

Diduck, A. and Mitchell, B. (2003). Learning, Public Involvement And Environmental Assessment: A Canadian Case Study. *Journal of Environmental Assessment Policy and Management*, Vol. 5:3 (339–364).

Diduck, A., Sinclair, A.J., Hostetler, G., & Fitzpatrick, P. (2012). Transformative learning theory, public involvement, and natural resource and environmental management, Journal of Environmental Planning and Management, 55:10, 1311-1330

Doelle, M., & Sinclair, A.J (2006.) Time for a new approach to public participation in EA: Promoting cooperation and consensus for sustainability. Environmental Impact Assessment Review 26 (2006) 185–205

Environmental Management and Co-Ordination Act (EMCA) (1999). Laws of Kenya, Chapter 387. Retrieved July 22, 2015 from **http://www.nema.go.ke/images/documents/emca.pdf**

Fischer, T. 2007. Theory and practice of strategic environmental assessment: towards a more sustainable approach. London: Earthscan.

Fischer, T. and Gazzola, P. (2006). SEA effectiveness criteria – equally valid in all countries? The case of Italy. Environmental Impact Assessment Review 26: 396-409.

Fitzpatrick, P. and Sinclair, A.J. (2003). Learning through involvement in environmental assessment hearings. Journal of Environmental Management 67: 161-174.

Gakungu, N. K., Gitau, A. N., Njoroge, B. N. K., Kimani, M. W. (2012). Solid Waste Management in Kenya: A Case Study of Public Technical Training Institutions. ICASTOR Journal of Engineering, Vol. 5, No. 3 (2012) 127 – 138

Gauthier, M., Simard, L., Waaub, J. (2011). Public participation in strategic environmental assessment (SEA): Critical review and the Quebec (Canada) approach. Environmental Impact Assessment Review 31 (2011) 48–60

GIBB Africa Limited (2014). SEA for the Integrated Urban Development Master Plan for the City of Nairobi. Retrieved 2nd Nov. 2015 from **http://citymasterplan.nairobi.go.ke/index.php/downloads/cat_view/6-sea**

Government of Kenya (GOK) (2015). Republic of Kenya, Kenya Vision 2030 1 (Nairobi: Government Printer, 2007). Retrieved July 22, 2015 from **http://www.vision2030.go.ke/wp-content/uploads/2015/06/Vision2030_Popular_version_final2.pdf**

Guerrero, L.A., Maas, G. & Hogland, W. (2013). Solid waste management challenges for cities in developing countries. Waste Management 33 (2013) 220–232

Habermas, J. (1981). The theory of communicative action Vol 1: Reason and the realisation of society. Boston: Beacon Press, in Mezirow, J. (2008). An Overview of Transformative Learning. In P. Sutherland & J. Crowther (Eds.), Lifelong Learning: Concepts and Contexts. London, UK: Routledge, 25-37.

Hanna, K. (Ed.) 2009. Environmental impact assessment: practice and participation. 2nd Edition. Toronto: Oxford University Press.

Haq, G. 2004. Background and context for a strategic environmental assessment. In Caratti, P., Dalkmann, H., and Jiliberto, R. (Eds) Analyzing Strategic Environmental Assessment. United Kingdom: Edward Elgar Publishing Ltd, 5-15.

Hay, I. (ed.) (2008). Qualitative Research Methods in Human Geography, 2nd edition. Oxford University Press, Melbourne.

Heiland, S. (2005). Requirement and methods for public participation in SEA. In M. Schmidt, E. João, and E. Albrecht (Eds) Implementing strategic environmental assessment. Vol. 2. Berlin: Springer-Verlag, 421-432.

Henry, R.K. Yongsheng, Z. Jun, D. (2006). Municipal solid waste management challenges in developing countries – Kenyan case study. Waste Management Volume 26, 1: 92–100

Hoornweg, D. and Bhada-Tata, P. (2012). *What a waste: A Global Review of Solid Waste Management*. Urban Development Series, World Bank. Washington D.C. **http://www.diva-portal.org/smash/get/diva2:656477/FULLTEXT01**.

Imam, A. Mohammed, B. Wilson, D.C, Cheeseman, C.R. (2008). Solid waste management in Abuja, Nigeria. Waste Management 28 (2008) 468–472

International Association for Impact Assessments: Impact assessment is the tool, Environmental quality & social equity are the results. (2015). Retrieved April 4, 2015 from http://www.iaia.org/?AspxAutoDetectCookieSupport=1

João, E. 2005. Key principles of SEA. In M. Schmidt, E. João, and E. Albrecht (Eds) Implementing strategic environmental assessment. Vol. 2. Berlin: Springer-Verlag, 3-14.

Jones, C., Baker, M., Carter, J., Jay, S., Short, M., and Wood, C. 2005. Strategic environmental assessment and land use planning: an international evaluation. London: Earthscan.

Josimovic´, B., Maric´, I., Milijic, S. (2014). Multi-criteria evaluation in strategic environmental assessment for waste management plan, a case study: The city of Belgrade. Waste Management 36 (2015) 331–342.

Kameri-Mbote, P., (2000). Strategic planning and implementation of public involvement in environmental decision-making as they relate to environmental impact assessment in Kenya, International Environmental Law Research Centre (IELRC). Retrieved July 22, 2015 from: **http://www.ielrc.org/content/w0003.pdf**

Kjorven, O., and Lindhjem, H. 2002. Strategic environmental assessment in World Bank operations. Environment Strategy Papers. No. 4. USA: World Bank.

Merriam, S. B. (1998). Qualitative research and case study applications in education. San Francisco: Jossey-Bass.

Mezirow, J. (2000). An Overview of Transformative Learning. In P. Sutherland & J. Crowther (Eds.), Lifelong Learning: Concepts and Contexts. London, UK: Routledge, Chapter 3; 25-37

Mezirow, J. (2008). An Overview of Transformative Learning. In P. Sutherland & J. Crowther (Eds.), Lifelong Learning: Concepts and Contexts. London, UK: Routledge, 25-37.

Mezirow, J. (2012). Learning to Think Like an Adult: Core Concepts of Transformation Theory. In E. W. Taylor & P. Cranton (Eds.), The Handbook of Transformative Learning: Theory, Research, and Practice. San Francisco, CA: Jossey-Bass, 73-95.

Mezirow, J. D. (1991). Transformative Dimensions of Adult Learning. San Francisco: Jossey-Bass.

Mwanzia, P., Kimani, S.N., Stevens, L. (2013). Integrated solid waste management: Decentralised service delivery case study of Nakuru municipality, Kenya. Briefing Paper 1812. Retrieved July 07, 2015 from **http://wedc.lboro.ac.uk/resources/conference/36/mwanzia-1812.pdf**

Mwenda, A.N. Bregt, A.K. Ligtenberg, A. Kibutu, T.N (2012). Trends in consultation and public participation within environmental impact assessment in Kenya, Impact Assessment and Project Appraisal, 30:2, 130-135,

Narayanasamy, N. (2009). Participatory rural appraisal: principles, methods, and application. New Delhi, India: Sage Publications.

Nasrabadi, T., Hoveidi, H., Bidhendi, G.N, Yavari, A.R., Mohammadnejad, S. (2008). Evaluating Citizen Attitudes and Participation in Solid Waste Management in Tehran, Iran. *Journal of Environmental Health.* Vol. 71(5)

National Environment Management Authority (NEMA) (2002). Environmental Impact Assessment and Audit Administration and Review Manual, 2002, NEMA web site, available at: www.nema.go.ke (accessed January 2006).

National Environment Management Authority (NEMA) (2012). National guidelines for strategic environmental assessment in Kenya. Accessed July 7th, 2015 from **http://www.nema.go.ke/images/Docs/Guidelines/SEA%20Guidelines%20.pdf**

National Environmental Management Authority (NEMA) (2014). SEA Reports. Accessed July 7th, 2015 from **http://www.nema.go.ke/index.php?option=com_phocadownload&view=category&id=77:sea-reports&Itemid=567**

Neefjes K. (2001). Learning from participatory environmental impact assessment of community-centred development: the Oxfam experience. In: Vira B, Jeffery R, editors. Analytical issues in natural resources management. New York: Palgrave. p. 111–125.

Njoroge, B N K., Kimani, M., Ndunge, D. (2014). Review of Municipal Solid Waste Management: A Case Study of Nairobi, Kenya. Research Inventy: International Journal of Engineering and Science. Vol.4(2):16-20

Njoroge, K.S, Wokabi, M.S, Ngetich, K, Kathuri, N. M. (2013). Influence of Informal Solid Waste Management on Livelihoods of Urban Solid Waste Collectors: A Case Study of Nakuru Municipality, Kenya. International Journal of Humanities and Social Science Vol. 3 No. 13.

Noble, B. (2000). Strategic Environmental Assessment: What Is It? & What Makes It Strategic? Journal of Environmental Assessment Policy and Management Vol. 2, No. 2 (June 2000) pp. 203–224

Noble, B. (2005). *Introduction to environmental impact assessment: a guide to principles and practices.* Toronto, ON, Canada: Oxford University Press; 2005.

Noble, B.F. and Harriman-Gunn, J. 2009. Strategic environmental assessment. In Hanna, K.S. (Ed) Environmental Impact Assessment: Practice and Participation, Ontario: Oxford University Press, 103-130.

O'Faircheallaigh, C. (2010). Public participation and environmental impact assessment: Purposes, implications, and lessons for public policy making. Environmental Impact Assessment Review 30 (2010) 19–27

Oberlin, A.S., & Sza´nto´ G. L., 2011. Community level composting in a developing country:case study of KIWODET, Tanzania. Waste Management & Research. 29(10) 1071–1077

O'Connor, H. Gibson, N. (2003). A Step-by-Step Guide to Qualitative Data Analysis. A Journal of Aboriginal and Indigenous Community Health 1(1)

OECD (2006). Applying Strategic Environmental Assessment Good Practice Guidance for Development Co-operation. Retrieved 9th Nov. 2015 from **https://www.cbd.int/impact/case-studies/cs-impact-oecd-dac-en.pdf**

OECD. (2012). Concepts and classification of Municipal Solid Waste. Retrieved July, 02 2015 from **http://stats.oecd.org/OECDStat_Metadata/ShowMetadata.ashx?Dataset=CSP2010&Coords=%5BSUB%5D.%5BWASTE%5D&ShowOnWeb=true&Lang=en**

OECD. (2012). Strategic Environmental Assessment in Development Practice, A Review of Recent Experience. OECD publishing.

Ofori, E. (2005). SEA for Water Resource Management in Ghana. In M. Schmidt, E. João, and E. Albrecht (Eds) Implementing strategic environmental assessment. Vol. 2. Berlin: Springer-Verlag, 305-319.

Okello, N., Beevers, L., Douven, W. & Leentvaar, J. (2009). The doing and un-doing of public participation during environmental impact assessments in Kenya, Impact Assessment and Project Appraisal, 27:3, 217-226.

Okot-Okumu, J. (2012). *Solid Waste Management in African Cities – East Africa*. Chapter 1, Waste Management – An Integrated Vision, © 2012 Okot-Okumu, licensee InTech.

Okot-Okumu, J., (2008). Solid waste Management in Uganda: Issues Challenges and Opportunities. POVIDE programme Workshop. The Netherlands

Onyango, V. and M. Schmidt. (2007). Towards a strategic environment assessment framework in Kenya: highlighting areas for further scrutiny. Management of Environmental Quality 18(3): 309-328.

Onyango, V. and Namango, S. (2005). The need for SEA in Kenya. In M. Schmidt, E. João, and E. Albrecht (Eds) Implementing strategic environmental assessment. Vol. 2. Berlin: Springer-Verlag, 291-303.

Palczynski, J. R., (2002). Study on Solid Waste Management Options for Africa. African Development Bank.

Paris Declaration on Aid Effectiveness (PDAE) (2005). Retrieved July, 22, 2015 from **http://www.oecd.org/dac/effectiveness/45827300.pdf**

Parrot, A.L, Sotamenou, B.J, Dia , B.K (2009). Municipal solid waste management in Africa: Strategies and livelihoods in Yaoundé, Cameroon. Waste Management 29 (2009) 986–995.

Partidário, M (2005). Capacity Building and SEA. In M. Schmidt, E. João, and E. Albrecht (Eds) Implementing strategic environmental assessment. Vol. 2. Berlin: Springer-Verlag, 3-14.

Partidario, M.R. (1996). SEA regulations and guidelines worldwide, in Therivel, R. and Partidario, M.R. (Eds), *The Practice of Strategic Environmental Assessment*, London, Earthscan: 15-29.

Passarini, F.; Vassura, I.; Monti, F; Morselli, L; & Villani, B., (2011). Indicators of waste management efficiency related to different territorial Conditions. Waste management: 32

Peters, K. (1998). Community-Based Waste Management for Environmental Management and Income Generation in Low-Income Areas: A Case Study of Nairobi, Kenya. Published by City Farmer, Canada's Office of Urban Agriculture **http://www.cityfarmer.org/NairobiCompost.html**

Petts, J. (1999). Public participation and environmental impact assessment in: Petts J, editor, *Handbook of Environmental Impact Assessment: Environmental Impact Assessment, process, methods and practice*, vol. 1. Oxford, United Kingdom: Blackwell Science, p.145-77

Pires, A., Martinho, G., Chang, N.B., (2011). Solid waste management in European countries: a review of systems analysis techniques. Journal of environmental management 92, 1033–1050, pp. 785-792.

Rachid, G. & El Fadel, M (2013). Comparative SWOT analysis of strategic environmental assessment systems in the Middle East and North Africa region. Journal of Environmental Management 125 (2013) 85-93

Rauchmeyer, F. and Risse, N. 2005. A framework for the selection of participatory approaches for SEA. Environmental Impact Assessment Review 25: 650-666.

REPCON Associates (2015). SEA Study for the Masterplan for The Leather Industrial Park, Kinanie- Athi River, Machakos County. Retrieved 3rd Nov. 2015 from **http://www.nema.go.ke/images/docs/SEA%20Reports/SEA%20038-masterplan%20for%20leather%20industrial%20park.pdf**

Retief, F. (2007). Effectiveness of Strategic Environmental Assessment (SEA) in South Africa. Journal of Environmental Assessment Policy and Management. Vol. 9, No. 1 (83–101).

Retief, F., Jones, C., Jay, S. (2008). The emperor's new clothes—Reflections on strategic environmental assessment (SEA) practice in South Africa. Environmental Impact Assessment Review 28 (504–514).

Rotich, H. K.; Yongsheng, Z; & Jun, D., 2006. Municipal solid waste management challenges in developing countries: Kenyan case study. Waste Management 26 (1), 92-100

Sadler, B. (2000). A Framework Approach to Strategic Environmental Assessment: Aims, Principles and Elements of Good Practice. Workshop on Public Participation and Health Aspects in SEA, Szentendre, Hungary. Retrieved June 11th, 2015 from **http://documents.rec.org/publications/International_proceedings_Nov2000_EN.pdf#page=13**

Sadler, B. (2005). (Ed). Strategic environmental assessment at the policy level: recent progress, current status, and future prospects. Czech Republic: Regional Environment Centre for Central and Eastern Europe.

Sadler, B. and R. Verheem. (1996). Strategic Environmental Assessment: Status, Challenges and Future Directions. Report 53. Ottawa: Canadian Environmental Assessment Agency, 1996.

Salhofer, S., Wassermann, G. Binner, E (2007). Strategic environmental assessment as an approach to assess waste management systems. Experiences from an Austrian case study. *Environmental Modelling & Software* 22 (610-618)

Scheinberg A., 2011. *Value Added: Modes of Sustainable Recycling in the Modernization of waste Management Systems*. PhD Thesis. Wageningen University. The Netherlands.

Schmidt, M., Joao, E., Albrecht, E. (2006). Implementing Strategic Environmental Assessment. Dordrecht: Springer-Verlag Berlin and Heidelberg GmbH & Co.

Selin, E (2013). Sustainable municipal solid waste management- A qualitative study on possibilities and solutions in Mutomo, Kenya. A Thesis in Environmental Health, UMEA Universitet. Accessed online on June 30th, 2015 from **http://www.diva-portal.org/smash/get/diva2:656477/FULLTEXT01.pdf**

Simelane, T., Mohee, R. (2012). Future Directions of Municipal Solid Waste Management in Africa. Africa Institute of South Africa, Policy briefing No 81, September 2012

Sims, L. (2012). Taking a learning approach to community-based strategic environmental assessment: results from a Costa Rican case study. Impact Assessment and Project Appraisal, 30:4, 242-252

Sinclair A.J., Diduck, A., FitzPatrick, P. (2008). Conceptualizing learning for sustainability through environmental assessment: critical reflections on 15 years of research. Environmental Impact Assessment Review 28 (2008) 415–428

Sinclair, A.J. and Diduck, A.P. (2001). Public involvement in EA in Canada: a transformative learning perspective. Environmental Impact Assessment Review 21:113-136

Spaling H. (2003). Innovation in environmental assessment of community. Canadian Geographer 47(2):151–68.

Spaling, H., Sinclair, A.J, Montes, J. (2011). Best Practices for Promoting Participation and Learning for Sustainability: Lessons from Community-Based Environmental Assessment in Kenya and Tanzania. Journal of Environmental Assessment Policy and Management. Vol. 13, No. 3 (343–366)

Stake, R. E. (2005). Qualitative case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), Handbook of qualitative research (3rd ed., pp. 443-466). Thousand Oaks, CA: Sage.

Tan, Y.J. (2012). The Management of Residential Solid Waste in Mombasa, Kenya. Independent Study Project (ISP) Collection. Paper 1388. Retrieved July 02, 2015 from **http://digitalcollections.sit.edu/isp_collection/1388**.

Tatu City Ltd. 2011. Tatu: Vision. Accessed 6 July 2015 from www.tatucity.com.

Taylor E. (2000). Analyzing research on transformative learning theory. In: Mezirow J, editor. Learning as transformation. San Francisco, CA: Jossey-Bass. p. 285–328.

Therivel, R. (2010). Strategic environmental assessment in action. London: Earthscan.

Thérivel, R. and Wood, G. (2005). Key principles of SEA. In M. Schmidt, E. João, and E. Albrecht (Eds) Implementing strategic environmental assessment. Vol. 2. Berlin: Springer-Verlag, 3-14.

Troschinetz, A.M. and Mihelcic, J.R. (2008). Sustainable recycling of municipal solid waste in developing countries. Waste Management. Volume 29, Issue 2, February 2009, Pages 915–923

UN Habitat (2008). UN-Habitat and The Kenya Slum Upgrading Programme-Strategy Document. (May, 2008). Retrieved 21st Nov. 2016 from **http://mirror.unhabitat.org/pmss/getElectronicVersion.aspx?nr=2602&alt=1**.

United Nations Environment Program (2010). Integrated Solid Waste Management Plan for the City of Nairobi, Kenya for the City Council of Nairobi on Assignment to the United Nations Environment Program 2010 2020. Retrieved July 27th 2015 from **http://www.centreforurbaninnovations.com/download/file/fid/416**.

United Nations Environmental Program (UNEP) (2010). Solid Waste Management in Nairobi: A Situation Analysis. Retrieved June 01, 2015 from **http://www.unep.or.jp/ietc/GPWM/data/T3/IS_6_1_Nairobi_SWM_SituationAnalysis.pdf**

United Nations Environmental Program (UNEP) (2013). Guidelines for National Waste Management Strategies, Moving from Challenges to Opportunities. Retrieved June 01, 2015 from **http://www.unep.org/ietc/Portals/136/Publications/Waste%20Management/UNEP%20NWMS%20English.pdf**

United Nations Environmental Programme and Government of Kenya (UNEP/GOK), 2013. Selection, Design, Implementation of Economic Instruments in the Kenyan Solid Waste Management Sector, Nairobi.

United Nations Industrial Development Organization (UNIDO) (2009). Integrated Assessment of Present Status of Environmentally Sound Management of Wastes In Africa. Africa review report on waste management. Sixth Session of the Committee on Food Security and Sustainable Development (CFSSD-6)

United Nations. (2012). Resource Manual to Support Application of the Protocol on Strategic Environmental Assessment

Walker, H., Sinclair, A.J. Spaling, H. (2014). Public participation in and learning through SEA in Kenya. Environmental Impact Assessment Review 45 (1–9).

Walker, H., Spaling, H & Sinclair, A.J. (2016) Towards a home-grown approach to strategic environmental assessment: adapting practice and participation in Kenya. Impact Assessment and Project Appraisal, 34:3, 186-198

Webler, T., Kastenholz, H., and Wendell, O.R. (1995). Public participation in impact assessment: A social learning perspective. Environmental Impact Assessment Review 15(5): 443-463.

Wood, C., Dejeddour, M. (1992). Strategic Environmental Assessment: EA of Policies, Plans and Programs, Impact Assessment, 10:1, 3-22

World Bank (2007). World Bank Participation Sourcebook. Retrieved July 22, 2015 from **http://www.betuco.be/voorlichting/Participation%20Sourcebook%20-%20World%20Bank.pdf**

World Bank (2012). Getting to Green—A Sourcebook of Pollution Management Policy Tools for Growth and Competitiveness. Retrieved 22nd Dec. 2015 from **http://siteresources.worldbank.org/ENVIRONMENT/Resources/Getting_to_Green_web.pdf**

Yin, R. K. (2003). Case study research: Design and methods (3rd ed.). Thousand Oaks, CA: Sage.

Zurbrügg, C (2002). Urban Solid Waste Management in Low-Income Countries of Asia; How to Cope with the Garbage Crisis. A Paper Presented for: Scientific Committee on Problems of the Environment (SCOPE). Urban Solid Waste Management Review Session, Durban, South Africa, November 2002

9 APPENDIX 1

Interview Schedules for SEA experts

1. **Background information**
   a) Name and responsibilities in connection to SEA
   b) In your opinion, how is SEA being used in Kenya? How many SEAs have you been involved in?

2. **Understanding the SEA Process**
   a) How would you define SEA based on experience? How is it different compared to project EA?
   b) Can you tell me about the Nairobi city/Red Coral SEA process that you have been involved in? What guided the SEA design in each case? (National or international guidelines?)
   c) Do you feel the SEA was initiated early enough to adequately inform the planning process and meaningfully involve the public? How was the timing?
   d) How were PPP alternatives considered in the SEAs?
   e) Were sustainability issues considered in the SEA (e.g., biological, social and economic considerations)?
   f) Were SEA recommendations used to amend the PPPs?
   g) Does the SEA report contain sufficient information for planners to make mindful decisions?

3. **Public Participation/Conditions for learning**
   a) Were there any form of consultations you participated in? What types? (e.g., workshops, meetings
   b) Were there adequate information in place to increase participants' ability to participate in the SEA process? (e.g. about the SEA process, the value of SEA, information related to the specific case, etc.)
      i. Did you understand the information provided?
      ii. Did you interact with members of the community to help with understanding the process and gathering comments from them?
      iii. Were the consultations accessible to different members of the community? If so, how so?
      iv. Which members of the public were invited to participate in the SEA?
      v. Were the marginalized people (women/youth) involved in the participation?
      vi. How much notice were participants given about consultations? How were they notified?
   c) Were the public involved in all procedural steps of the SEA process? (e.g., baseline/scoping, draft report review, SEA follow-up and/or evaluation)
   d) Were the communities of participants provided with funding? If so, what activities were funded?
   e) Do reports explicitly show how input/comments/concerns were addressed?
   f) Are there any improvements for participation in the SEA that you would make?

4. Do you have any other suggestions or comments on SEA and implementation of SEA in Kenya?
5. Can you mention any needed improvements to a successful SEA process in Kenya?

6. **Solid waste management issues**
   a) What SWM alternatives were considered during the SEA process and how were they decided on?
   b) Do you think the SWM alternatives chosen in the SEAs are the best alternatives in this situation? Why?
      i. Can you tell me what techniques/methods were used for their selection?
      ii. Do the chosen methods allow for active involvement of affected communities?
      iii. If yes, how were they involved and were they made aware of this during the selection process?
      iv. Was sustainability a central component of the selection process? Can you explain how so?
   c) What other ways do you think sustainable SWM systems can be achieved? (e.g., why were options such as landfilling and incineration not considered as part of the SEA?)
7. Do you have any additional information or comments about solid waste management in large cities in Kenya?
8. Do you have any further comments on SEA in Kenya, solid waste management or this survey?

10 APPENDIX 2

Community Interview Schedule

1. **Background information**
   a) Name and occupation?
   b) How long have you been living in this community? (Nairobi/Kiambu, depending on the community each SEA addresses)

2. **Public Participation/ Conditions for Learning**
   a) Can you recall participating in the SEA for Nairobi/Red Coral? If so, how were you involved?
   b) Do you recall the purpose of the SEA?
   c) What sorts of opportunities were there to participate? How often?
   d) What activities did you participate in?
   e) As a result of your involvement can you tell me what an SEA is?
      i. Do you know or did anyone tell you the purpose of this SEA? How were you informed?
      ii. How much notice did you get before the meetings? Was this enough notice?
      iii. Was there enough information given for you to understand why the meeting was held?
      iv. Was there any information given you during the SEA about specific issues (e.g., the range of ways that solid wastes might be managed)? Would you mind sharing?
   f) What are your reactions to the SEA process more generally?

3. **Participation process**
   a) Did anyone tell you the importance of participating in this SEA (with respect to Nairobi/Red Coral SEAs)?
      i. If yes, can you share with me what they told you?
      ii. Why do you think it is important?

   b) During the SEA meetings, what issues did you discuss with other participants? What about outside of the official meetings?
      i. More personally, what were some of the issues you raised – or what were your concerns if you did not raise them in meetings? (e.g. challenges such as solid waste management)
      ii. Were these issues of particular importance to you or your community? How?
      iii. Do you think everyone was equally able to give their opinions?
   c) In your opinion, is the SEA important to you?
   d) Do you think you have been either positively or negatively affected?

   e) SWM problem
   a) What are your thoughts about situation in this community regarding waste/garbage?
   b) What was the situation 5 years ago? What about 10 years ago- Can you recall?
   c) Can you think of any wants or needs of the people living in your community regarding the management of solid waste?

d) I would like to ask you about SWM considerations in the SEA;
    i. Did you discuss and were you told about different ways of managing waste in the SEA meetings? (e.g. recycling, recovery, composting)
    ii. Were the SWM alternatives selected in the SEAs in line with what the community wanted?
    iii. If yes, do you think the selected SWM alternatives are the best options? Why? Are there any options missing? (e.g., Avoidance, minimization)
    iv. Do you think the SWM alternatives in the SEAs will yield positive outcomes for solid waste management or do you expect things will stay unchanged?
    v. What do you think could help in achieving a sustainable solid waste management system in your community?

4. Learning outcomes

a) What did you learn through participation in this SEA? e.g., Did you learn anything about:
    i. The local environment and the community in general?
    ii. Working together with other community members?
    iii. Did you learn any new skills?
    iv. Do you think what you have learned have changed your viewpoints about:
        i. Your activities in the environment?
        ii. Your community's activities in the environment?
        iii. How you can be involved in environmental decisions?
b) Did participating in the SEA change the way you think about or manage solid waste?
c) Have other people within the community changed in this way too? (Other participants/non-participants?)
d) Do you think the SEA will change how waste will be managed in this city in the future?
e) Was there any follow-up after the meetings? If yes, was the information presented to you?
f) Was the information accurate? Do you think your input was used?
g) Would you like to participate next time?
h) Do you have any additional information to add or any questions to ask me?
i) Do you have any further comments about the new city proposal, SEA, solid waste or this interview?

11 APPENDIX 3

An interview schedule for Community-Based Waste Organizations (CBOs) and other waste-based NGOs

1. How long have you been existing as a community-based solid waste management group?

   a) Who are the members of your group? What do you do?
   b) Has joining a CBO changed your personal views about SWM/Composting?
   c) Are there any new skills/knowledge learned?
   d) Have any of the things you learned caused you to change your viewpoints about:
      i. Waste management activities in your environment?
      ii. Your community's waste management activities?
      iii. Working together as a waste-management group?

2. What improvements do you think can be done in these communities [Nairobi/Kiambu] in reaching a functioning waste disposal system?

3. Did you participate in the SEA meetings for the Red Coral/Nairobi city plan? If so, what ideas did you bring there?

3. How could information on waste management be brought to the public in an effective way especially through SEA?

4. What are your thoughts on establishing a safe and sustainable waste disposal system regarding both the collection, sorting, recycling, reuse, trade of waste, transportation and destruction in a licensed way? Do you think these ideas were well reflected in the SEA for the Red Coral/Nairobi city plan?

5. Do you think these are the most important steps right now to reach for a sustainable development in the waste sector?

12 APPENDIX 4

Research Ethics and Compliance Certificate

UNIVERSITY OF MANITOBA | Research Ethics and Compliance
Office of the Vice-President (Research and International)

Human Ethics
208-194 Dafoe Road
Winnipeg, MB
Canada R3T 2N2
Phone +204-474-7122
Fax +204-269-7173

APPROVAL CERTIFICATE

October 23, 2015

SSHRC
36820

TO: **Patricia Ozoike**
Principal Investigator

(Advisor J. Sinclair)

FROM: **Lorna Guse, Chair**
Joint-Faculty Research Ethics Board (JFREB)

Re: **Protocol #J2015:119**
"The Roles of Strategic Environmental Assessment and Learning in Planning for Successful Community-based Solid Waste Management in Kenya"

Please be advised that your above-referenced protocol has received human ethics approval by the **Joint-Faculty Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement (2). **This approval is valid for one year only**.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- **If you have funds pending human ethics approval, please mail/e-mail/fax (261-0325) a copy of this Approval (identifying the related UM Project Number) to the Research Grants Officer in ORS in order to initiate fund setup. (How to find your UM Project Number: http://umanitoba.ca/research/ors/mrt-faq.html#pr0)**

- **if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.**

The Research Quality Management Office 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*.

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/orec/ethics/human_ethics_REB_forms_guidelines.html) **in order to be in compliance with Tri-Council Guidelines.**

umanitoba.ca/research