Actioning sustainability through next generation community-based environmental assessment

By

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Abstract

This research was initiated as a small step towards actioning local sustainability, with the aim of contributing to solutions for overarching natural resource and environmental management (NREM) issues. Community-based environmental assessment (CBEA) is community-driven and focuses on participatory approaches to determining the environmental and social implications of local projects, and, as such, confronts many current NREM challenges in the context of smaller, rural development projects. Next generation CBEA, drawing on next generation EIA principles, such as sustainability, meaningful public participation, follow-up and monitoring, and learning, was tested in my research to determine if it is better equipped to action local sustainability for small-scale projects than even CBEA.

I conducted my research in two phases. In the first phase, I undertook key informant interviews with academics and EIA practitioners and made a field visit to Kenya to better understand CBEA in the local context and to establish potential case studies. This work helped me design a next generation CBEA architecture and develop a frame that included the steps for implementation. The second phase of my research focused on testing the next generation CBEA frame, which required collaboration among different agencies, such as NEMA (National Environment Management Authority, Kenya), licensed EIA experts, the project proponents, and community members. Once the initial linkages were established, I tested the potential of the next generation CBEA frame by implementing it in two different case study sites in Kenya. During the pre-CBEA phase, I spent additional time to understand the local context and build capacity among the CBEA participants to set the foundation for the actual CBEA.

Three key conclusions were drawn from the research here: i. role of the pre-CBEA phase in next generation CBEA is crucial since the advanced form of CBEA requires preparation for the successful integration of next generation components. Second, the key role of the facilitator is quite multidimensional in next generation CBEA, including responsibility for liaising, collaboration, and capacity building of participants. Third, next generation CBEA and social learning share a symbiotic relationship. Next generation CBEA provides a platform to facilitate learning, and learning helps further the assessment.

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Dedication

To all academics, research scholars and environmental assessment practitioners for their tireless effort.

Table of Contents

Appendices

List of Tables

List of Figures

List of Acronyms

CBEA	Community based environmental assessment
EIA expert	Environmental assessment expert
EIA	Environmental impact assessment
NEMA	National Environment Management Authority
NREM	Natural Resources and Environmental Management

Glossary of local terms

Gutoria muno (in Kikuyu language) Things that last longer (sustainable)

Chapter 1
Introduction

"We have not inherited the earth from our fathers. We have borrowed it from our children" (UNEP, 1980).

The growing human footprint on the environment has been a significant and increasing concern throughout the 20th and 21st century, and therefore, the concept of sustainable development was a breakthrough in the 1980s as a response to this increasingly persistent global issue [Thiele, 2013; Kuhlman & Farrington, 2010]. Sustainability has been a normative goal for resource managers and many governments for some time now, and has become all the more pressing with issues, such as climate change, depletion of resources, and the inability of some states to meet the basic needs of their people [Thiele, 2013]. Conceptions of sustainability have been described by Weaver et al. [2008] as notoriously fuzzy, contested, and unceasingly evolving. Sustainability initially was perceived as environmental protection that requires expert knowledge while downplaying the significance of equity, and was often perceived as environmental related issues [Griswold, 2017]. The foundation of environmental impact assessment (EIA) was laid on expert knowledge, especially scientific knowledge, with the goal of minimising adverse project impacts in order to safeguard the environment, which lined up with early conceptions of sustainability.

1.1 Environmental impact assessment (EIA)

EIA was initially developed as one of the management tools for environmental protection. Conventional EIA, which has a foundation in legislation, regulation, and policy, is considered by some to be at the vanguard of approaches for implementing sustainable solutions [e.g., Gibson et al., 2015; Morrison-Saunders, & Therivel, 2006; Meredith 1992]. Walker [2010] explains how impact assessment tools are considered as ways to address the issue of environmental injustice through appropriate decision-making. Conventional EIAs have been playing a considerable role in large scale and complex projects in environmentally sensitive areas, which often require rigorous and intense scientific studies [Morgan, 2012; Spaling & Vroom, 2007]. EIA is commonly practiced worldwide, with more than 100 countries having adopted the practice, and is also normatively required by many funding agencies [Jay et al., 2007]. Conventional EIAs include a series of basic and widely practiced steps, such as screening, scoping of boundaries and narrowing down the focus to the most valued components, impact

predictions, mitigation measures, management plans, that include monitoring and follow-up activities, and reporting [Morgan, 2012; Spaling, 2003]. A well-functioning support infrastructure exists for assisting in capacity building, guidance, or training from professional agencies, such as International Association for Impact Assessment (IAIA), through to various international and partner agencies, such as United Nations Environment Programme, the World Bank, World Health Organisation, etc., [Morgan, 2012].

1.2 Environmental impact assessment in Kenya: An overview

With a vision to ensure a clean, healthy, and sustainable environment for Kenyans, the National Environment Management Authority (NEMA) of Kenya is responsible to coordinate, supervise, and manage matters related to the environment in Kenya. EIA in Kenya is a preventive process that aims at minimising adverse impacts and maximising the positive impacts of a potential project or program [National Environment Management Authority, 2021]. NEMA has explicit guidelines regarding the kinds of projects that require an EIA. For example, urban development, transportation, dams, rivers and water resources, aerial spraying, mining, forestry, agriculture, processing, and manufacturing are some of the areas where EIA is mandatory. Furthermore, the NEMA guideline states that EIA in Kenya is also a decision-making tool that is conducted at the initial stages of the development of a project to determine whether it should be implemented as is, rejected or approved with some modifications.

The Environmental Management and Coordination Act 1999 of Kenya (EMCA) has clear mandates for EIA. The EMCA established means for the protection of the Kenyan environment through EIA, environmental auditing and monitoring, and environmental restoration and conservation. Screening of proposed activities, according to the EMCA, is the first step where it is decided whether a specific project will be subjected to a full-fledged EIA study or, if it is deemed unlikely to have significant environmental impacts, may proceed with seeking approval through completing a project report. Project reports must include a brief description of the proposed project and site, information on baseline data and analysis, evaluation on the significance of environmental impacts, evaluation of alternatives, and reporting on consultation and public participation. If NEMA considers that a project may have significant environmental impacts, proponents have to conduct a full EIA study, which follows a process of scoping and drawing-up terms of reference (TOR), gathering baseline data that must be submitted in the report, review of the EIA study report by the relevant agencies, the EIA decision (i.e. approval,

approval with conditions or rejection), appeals, project implementation, monitoring, and finally, auditing of the project. The scope for consultation and public participation is quite clear in the case of an EIA study, where proponents are expected to highly engage with affected local communities through public hearings and community meetings, conducting seminars or workshops, surveying public opinion, etc. Since Article 42 of the Kenyan constitution has the provision for every Kenyan to have access to a clean and healthy environment, it makes sense for Kenyans to participate in the management, protection, and conservation of the environment; which can also be linked to Article 69 on public participation. Failure to submit a report as required by NEMA or submission of a report based on false information, is an offense as per the EMCA and the person or proponent responsible for the offense is liable for up to two years of imprisonment and/ or a penalty worth a Million Kenyan Shillings [National Environment Management Authority, 2021].

Despite its importance and legal requirement, the conventional EIA process across the world has been criticised for flaws that have limited its achievement of sustainability objectives in a broader context [Joseph et al., 2015; Jay et al., 2007]. Since its emergence in the 1970s, EIA has gone through several stages of development, conceptually as well as in practice; however, despite this evolution, Joseph et al. [2015] express doubts regarding its ability to achieve sustainable outcomes and environmental protection. The conventional model of EIA, which is seen as a comprehensive, technocratic model that predominately uses a reductionist and empirical approach that relies primarily on outside experts and Western scientific knowledge for informing rational decision making, may not be a good fit for smaller, rural development projects in developing countries [Spaling, 2003].

Spaling's [2003] scholarship in East Africa sheds some light on various challenges to implementing conventional EIA in developing countries, such as the need for an extensive database and sophisticated technologies pertinent to EIA, which might not be an option or a requirement for smaller, rural development projects. Spaling further warns that the strongly deterministic Western EIA model may further escalate power imbalances among stakeholders, especially between state and local communities. Participation and input from local communities, especially indigenous perspectives, are critical to achieving sustainability, and therefore reconciliation with local communities is indispensable [Meredith, 1992].

1.3 Community-based environmental assessment (CBEA)

Community[1]-based environmental assessment (CBEA) is proposed as an alternative to conventional EIA [Spaling et al., 2011; Spaling, 2003] that is suited to relatively small, rural development projects [Kilemo et al., 2014**;** Duffy & Tschirley, 2000]. CBEA, is an EIA that is community-driven and focusses on community-based participatory approaches, encourages the identification and mitigation of the adverse impacts of smaller development projects [Spaling &Vroom, 2007; Spaling, 2003]. CBEA is much more than just another process of assessment, it is a platform where community members actively participate in assessing the environmental, social, and economic impacts of a potential development initiative using their indigenous knowledge, existing information, lived-experience, and sociocultural values [Spaling et al., 2011; Sims & Deb, 2009; Sinclair et al., 2009]. As such, CBEA is based on the notion of community development and aims to address local sustainability through the integration of various components, such as self-reliance, democracy, local environmental values, indigenous knowledge, and inclusive decision making [Spaling et al., 2011; Spaling, 2003]. The literature also contends that, because the local context is considered and an appropriate assessment scale employed, CBEA is a useful tool in project planning that aims to integrate environmental sustainability factors into development initiatives [Kilemo et al., 2014; Sims & Deb, 2009; Spaling, 2003].

CBEA, however, is not a replacement for the EIA of large infrastructure development projects; rather, it is meant to add value to the assessment of smaller, rural development projects through developing a better understanding, by providing a platform for meaningful public participation, and via incorporating traditional knowledge [Spaling et al., 2011]. A few examples of successful CBEAs are the crop and goat project in Tanzania [Kilemo et al., 2014], the Kisayani community water supply project in Kenya [Spaling et al., 2014], the Mkonze sand dam project in Tanzania, and the Manipur food security project in India [Information obtained through personal communication with Spaling in 2018].

[1] A community, in this context can be considered as an "organic whole" [Agrawal & Gibson, 1999], a relatively small and spatially fixed social entity [Lane & McDonald, 2005] whose inhabitants have shared practices, social norms, and/or common cultural identities [Dyer et al., 2014].

CBEA is not free of challenges, despite its acclaimed benefits. In many places, especially in developing countries, communities or local non-profit organisations lack adequate capacity to conduct CBEA [Spaling & Vroom, 2007]. Collaborative management of natural resources in remote areas requires that appropriate measures are taken to foster community involvement and participation [Musavengane & Simatele, 2016; Sinclair et al., 2009]. While criticising community politics, Spaling et al. [2011] and Lane and McDonald [2005] explain how community-based approaches can cater too much to the needs of local elites whilst marginalising certain people within a community, which may lead to unjust consequences. Naïve localism stemming from politics is not uncommon in community-based approaches [Lane & McDonald, 2005]. Power imbalances and the dominance of local elites are two important issues that make meaningful public participation challenging in CBEA or in community-based NREM [Cassidy, 2020; Spaling et al., 2011; Sinclair et al., 2009].

Since unsustainable development and land-use changes are pervasive worldwide [Lambin et al., 2001], the question arises as to whether CBEA as currently practiced is capable of anticipating the outcomes of development initiatives and mitigating adverse impacts in a way that ensures net contributions to local sustainability. Given this uncertainty, what is needed is an advanced form of assessment that addresses some of the above-mentioned issues (e.g., local politics).

A next generation EIA, as explained by Gibson et al. [2015, p. 261], aims to contribute to enduring wellbeing through a "deliberative decision-making process that fosters mutual learning" among all the participants to build their capacity for meaningful participation in decision making. As such, next generation EIA, which aspires to be comprehensive, value-driven, and inclusive, may have the potential to drive this needed reform of CBEA.

1.4 Research purpose and objectives

The purpose of my PhD research was to develop a framework for CBEA that incorporates key next generation EIA principles, including sustainability, meaningful public participation, follow-up and monitoring, and learning, and in doing so, to contribute to both CBEA practice and a social learning approach to CBEA.

In order to address the overarching purpose of my research, I set five specific objectives.

Objective 1: To critically analyse current African CBEA practices to understand any recent developments.

Objective 2: To develop a framework for next generation CBEA.

Objective 3: To examine the potential of the next generation CBEA framework.

Objective 4: To identify and document various barriers and enablers that may inhibit or enable the implementation of specific next generation CBEA activities.

Objective 5: To examine and explain the relationship between next generation CBEA and social learning and to identify the transformative aspects of social learning that emerged in this research and that may be possible.

1.5 Research overview

The research was conducted in Murang'a and Kirinyaga counties within the central region of Kenya in East Africa (Figure 1.1). Both counties were chosen for their potential for applying the next generation CBEA framework to two different proposed development projects, as described in Chapter 3.

Figure 1.1 Kenya study sites

Credit: Jessica Waldinger

Due to the participatory nature of the CBEA, I employed a participatory paradigm that allowed me to explore multiple ways of knowing. My research employed the elements of participatory research to generate data, such as participant observation, semi-structured

interviews, and dialogues. I collaborated with the locally licensed environmental assessment (EIA) experts and the involved communities to jointly work on local sustainability issues and co-produce knowledge for mutual gain.

I employed researcher-driven participatory research (RPR), meaning that the research was initiated, planned, and designed by me in an academic environment in Canada, and then executed in full collaboration with the local EIA experts and communities in Kenya. A qualitative research approach dovetailed well with the participatory research paradigm. I used a case study strategy of inquiry, which was compatible with both the participatory research paradigm and RPR approach. The case study sites were identified based on selection criteria, such as the availability of suitable projects, which are described in detail in Chapter 3.

The data collection tools and research activities were organised around the five research objectives. There were two different phases of data collection. The first phase of my research involved understanding the status of EIAs and public participation in the assessment process in the African context, especially in sub-Saharan Africa, which I accomplished through the review of available literature, both academic and relevant non-academic documents. This phase also included the development of the next generation CBEA frame, which was the second objective of the research. In order to develop the frame, I carried out key informant interviews (Appendix A) with academics, practitioners, and consultants across the world. I also made an exploratory visit to Kenya during this phase to understand the local context and develop connections for the fieldwork.

In phase 2, two active CBEAs were a major part of the data collection procedure. Following my arrival in Kenya, I identified potential case study sites and tested the potential of the next generation CBEA frame in collaboration with local EIA experts and communities at two different sites. The phase 2 of my fieldwork was further divided into three sub-phases. The pre-CBEA phase was all about rapport building, understanding the local context and setting the groundwork for the CBEA activities. I used Participatory Rural Appraisal (PRA) tools, such as workshops, to educate people on environmental assessment and various concepts around it. The CBEA phase focused on testing the next generation CBEA frame, and involved various group activities and some more PRA tools, such as transect walks. I followed the steps of conventional EIA, such as screening, scoping, and development of the environmental management plan. I had one research assistant at each site to assist me in my research and also served to act as

interpreters for me. The last phase was the post-CBEA phase where I used group dialogues (Appendix B) and semi-structured interviews with individual CBEA participants (Appendix C) to get feedback on the CBEA process. These two interactive processes helped me understand what had worked and what did not go well, as well as providing information on social learning. Participants' consent was obtained before the group dialogues (Appendix D) and individual interviews (Appendix E). Multiple layers of ethics approval were required and obtained from various jurisdictions, i.e. in Canada and Kenya prior to beginning the research, which is described in details in Chapter 3.

After the interviews were transcribed and translated[2] and field notes were typed up, data analysis was carried out with the help of NVivo software. Data analysis included coding, thematic sorting, and identifying relationships among the various themes. Multiple data collection methods employed as part of triangulation as well as member checking were used to establish the credibility of the research findings. The preliminary findings of the research in the form of photo journals were shared at both sites. Preliminary findings were also shared with the NEMA officials in Nairobi, where a PowerPoint presentation was made. Each of these steps in the research process and data analysis are described in detail in Chapter 3.

1.6 Significance of research

This research has both theoretical and practical significance. The earlier insight on the status quo of EIA and CBEA indicates the existing gaps within the assessment process. The review of literature on the African context, my personal experience witnessing two public consultation/participation meetings in Kenya (other than the two case studies), and interaction with local key informants all informed me about the local context, and those inputs were translated into the design of the next generation CBEA. A key outcome of this research is an advanced form of EIA that is community-based and incorporates 'next generation' thinking (described in Chapter 2), and that has been tested in Kenya. Moreover, it has practical relevance in guiding and operationalising an advanced form of CBEA, particularly suited to smaller and rural development projects.

My research mostly contributes to the CBEA concept and practice. The outcome of the research may help address the gaps identified in current practices. The best practices and barriers

[2] Since I did not speak the Kikuyu language, the research assistants and the members of proponents at both sites helped in translation and interpretation during the CBEAs.

identified during the testing of the advanced CBEA model provided insight into what needs to be improved, and how, to make CBEA more effective and efficient.

This research also contributes to the understanding and application of the social learning approach in community-based assessments. The potential of social learning in the context of natural resources management has been well recognised and appreciated in developed countries [e.g., Cheng & Mattor, 2010; Garmendia & Stagi, 2010; Webler et al., 1995]; however, very little scholarship exists from the developing world. This research had a learning component that aimed to contribute to the social learning literature from a developing country perspective by addressing some of the identified gaps (described in Chapter 2), which were observed and documented during the CBEAs in Kenya.

1.7 Organisation of thesis

This introductory chapter sets the context for exploring next generation CBEA by highlighting sustainability issues in current practices. Chapter 2 reviews literature on the status of environmental assessment in an African context, introduces the core concepts of the next generation CBEA frame, and discusses the social learning approach and its evolution in the context of natural resources management. Chapter 3 provides details of the research methods, including the research paradigm, strategy, case study research methods, and data analysis. Chapter 4 describes the architecture and frame of next generation CBEA. Chapter 5 describes the two case study sites and the implementation process of the advanced model of CBEA. Chapter 6 identifies and explores key enablers and barriers from the testing of the CBEA framework. Chapter 7 discusses the relationship between CBEA and social learning and some of the transformative outcomes of the social learning approach, while addressing the identified gaps in the social learning literature. The final chapter presents my conclusions and reflects on the research purpose and objectives and the next generation CBEA frame in light of what was found in the two case studies.

Chapter 2
Setting the context: Next generation community-based environmental assessment

"Surely we have a responsibility to leave for future generations a planet that is healthy and habitable by all species" (Sir David Attenborough, N.D).

2.1 Introduction

Chapter 2 is all about setting the context for next generation CBEA in Africa. The chapter begins with an overview on natural resources management based on the experience in some African countries with a focus on EIA including innovations and challenges while setting the context for next generation CBEA. The chapter then discusses the evolution of the four different components that are part of the next generation CBEA. The last section of the chapter justifies the significance of social learning and discusses its evolution in the context of natural resource management while highlighting some of the gaps.

2.2 The African context

As sustainability has increasingly become the normative objective of many development initiatives in the developing world (e.g., World Bank-funded projects), EIA has become indispensable as a planning and decision-making tool in this region. Many small projects in some African countries failed in the 90s because of poor planning, weak governance and management, lack of experience, and limited access to information and technical expertise [Kakonge, 1995]. Hence, Kakonge and others [e.g., Zuofa & Ochieng, 2014; Kakonge, 1998] recommend EIA to achieve more successful project outcomes.

Spaling's [2003] scholarship in the sub-Saharan African region, on the other hand, sheds light on the limitations of EIA as a potential approach to development planning because of the lack of adequate capacity and expertise to conduct an assessment, lack of public awareness, adequate local environmental information/data, and the need for trained personnel. From an East African perspective, Spaling's scholarship further explains that as conventional EIAs in the western world are largely rational, reductive and empirical, and follow a scientific approach that predominantly rely on experts from outside, which may not necessarily be available locally; further, there may not be a requirement for a complex scientific approach with advanced technologies for many smaller rural development projects. Also, conventional EIAs often lack

meaningful public participation in decision making [Spaling et al., 2011; Spaling, 2003; Duffy & Tschirley, 2000], which is one of the key components necessary for sustainability discourse that mostly emerges out of the meaningful public participation and sharing of worldviews [e.g., Walker et al., 2014; Hugé et al., 2013; Spaling et al., 2011; Sims & Deb, 2009].

Community-based approaches to natural resources and environmental management (NREM), on the other hand, are well recognised and advocated in many African countries [Aheto et. al, 2016; Dyer et al., 2014]. Many local communities use the embedded indigenous knowledge and skills, experiences, and institutions to manage their local environment through collective decision making [Conrad & Daoust, 2008**]**, participation, cultural autonomy, and the desire for an enduring and healthy environment [Agrawal & Gibson, 1999]. Unlike the colonial top-down approach where governments as resource managers largely decouple people from their environment, community-based approaches are committed to re-coupling people with their surrounding environment [Hoole & Berkes, 2010]. The same sort of a community-based approach to EIA is now recognised and increasingly used in many international development projects as a way to address the shortcomings of the conventional EIA approach [Morrison-Saunders et al., 2020; Spaling & Vroom, 2007; Spaling et al., 2001].

Because of the influx of many nonprofit organisations from western and developed countries, including from Canada, public participation has become a mandatory requirement for many developmental projects to satisfy the required legitimacy for those respective countries. In this regard, some recognise the great potential for CBEA that is founded on strong community participation, to be a very effective way to better involve local people in decisions around smaller development projects that affect them [e.g., Kilemo et al., 2014; Spaling et al., 2011; Spaling, 2003].

2.2.1 CBEA innovations in select African countries

Community-based approaches to EIA are relatively new to many countries in Africa and the potential is yet to be fully explored. Since its inception in the early 1990s, CBEA in some African countries has been revised many times to dovetail various societal needs [Spaling, 2003]. Spaling's scholarship further underlines some major innovations of CBEA, including a shift towards more participatory and trans-active planning, embracing assessment tools from participatory rural appraisal (PRA), reinforcing the capacity of communities at the grassroots level, and addressing various development initiatives with CBEA. Some of the participatory rural

appraisal (PRA) tools have already been tested and verified in CBEA within the last two decades and have been proven to be effective and efficient, especially in Kenya and Tanzania [Sinclair et al., 2009]. Also, the integration of local knowledge into CBEA has contributed to the overall success of the assessment process [Spaling, 2003; Neefjes, 2001]. Due to the global demand and consciousness about sustainability, myriad non-profit organisations in sub-Saharan Africa have enhanced their capacities by adopting various innovative tools and techniques to conduct CBEA [Spaling & Vroom, 2007]. Consideration of sustainability is gradually becoming common practice in project or policy development and environmental decision-making in many African countries through processes such as CBEA [Sala et al., 2015].

2.2.2 CBEA challenges

Regardless of initial successes and increased efficiency, CBEA in some African countries also has its share of challenges, reflecting some of those mentioned in Chapter 1. For example, Kilemo et al. [2014] and Spaling et al. [2011] experienced challenges while trying to encourage women and youth to participate in the decision-making process in sub-Saharan Africa. Similarly, the lack of adequate communication and inadequate notice can create hurdles in public participation, which Walker et al. [2014] experienced while conducting a strategic environmental assessment in Kenya. In the meanwhile, some of the challenges faced by myriad researchers, particularly in some African countries are the lack of adequate capacity to conduct EIAs [Spaling & Vroom, 2007], and power imbalances and dominance of local elites [Spaling et al., 2011; Sinclair et al., 2009]. Thus, there is a need for a better, more efficient, and less complicated assessment approach that can contribute to overall sustainability and wellbeing.

2.3 Next generation EIA

Since its inception in the late 1960s, EIA processes have evolved and continue to do so [Gibson et al., 2015]. In this time EIA processes have in many cases transformed from being technocratic and rationalist in orientation, towards being more integrated, participatory and sustainability-oriented [Sinclair et al., 2018; Morgan; 2012]. Cashmore [2004], also establishes that this evolution of EIA has included two broad and overlapping paradigms, namely; EIA as applied science and EIA as civic science. He notes that these are on opposite ends of the ontological spectrum with logical positivists at one end to the socially constructed relativism at the other extreme. Cashmore [2004] further explains that how EIA as civic science model that emphasises inclusive and dialogic process where participants engage in decision making and

where the role of social sciences is considered crucial is different from EIA as applied science that is based on pure science and where there is a clear demarcation of facts and values and limited scope for public engagement.

Gibson [2002] notes four stages in EIA process evolution: first, the reactive stage that focused on local pollution control; second, the proactive stage of impact identification and mitigations; third, the stage of integration of broader environmental considerations; and finally, the stage of integrated planning and decision-making. The very first stage used various scientific and quantitative methods and placed the greatest emphasis on technical solutions to address primarily air, water, and soil pollutions where decisions would be taken to inform others without much scope for public participation/consultation to influence decisions [Sinclair et al., 2018; Cashmore, 2004]. Decision making in this stage is very much restricted to often closed negotiation between policy-makers/government and polluters [Sinclair et al., 2018]. This expert-driven approach of EIA governed by technical rationality was strongly criticised for its decision-making approach, which was independent of the EIA process itself and based on technocratic merits [Bartlett & Kurian, 1999]. A clear emphasis was placed on scientific facts that was separate of value judgements in decision making [Cashmore, 2004].

Gradually, there has been a shift in EIA approach towards civic science where space is created for collaboration, inclusion of stakeholders in planning and decision making, and communication to capture the values of participants [Morgan, 2012]. This gradual shift in EIA approach is captured in different ways by various scholars. For example, Sinclair et al. [2018] refer to as stage 3 (following Gibson, 2002), Cashmore [2004] as the participation model, while Bartlett and Kurian [1999] call it the pluralist politics model. Regardless, the general focus of EIA processes that reflect this evolution celebrate the inclusion of various stakeholders, including the public, environmental groups, etc. in EIA processes, and create space for negotiation, bargaining, and compromise among these individuals and groups [Cashmore, 2004; Bartlett & Kurian, 1999]. Through this change scholars witnessed a contingent shift in the role of experts/technocrats in EIA processes from being authoritarian to filling a more facilitating role [Morgan, 2012]. The use of extensive social science techniques, such as negotiated scoping, community advisory committees, civic juries, and community engagement in decision-making through participation also became apparent [Cashmore, 2004].

Despite this shift in approach and in some cases the process of decision making, this style of EIA process was criticised for the misuse of participatory "tools for citizen co-optation" [Bartlett & Kurian, 1999, p. 423]. Bartlett and Kurian further explain how regardless of the existence of plurality of interests through public participation, certain groups had the leverage to influence the EIA decision-making. The underlying issue of power and privilege was overlooked since power relations among participants certainly trivialise the ability of the disenfranchised to negotiate equitably [Morgan, 2012; Bartlett & Kurian, 1999].

This leads to calls regarding the need for EIA to follow a more integrated approach, based more closely on local needs and priorities while also maintaining ecological integrity, equity and social justice, ensuring right of local communities to self-determination and cultural diversity, and representing the values of local people to address the issues of achieving environmental sustainability [Morgan, 2012; Cashmore, 2004; Bartlett & Kurian, 1999]. This thinking is the foundation of next generation assessment.

2.3.1 The concept of next generation EIA

Drawing on goals related to sustainability, as well as shortcomings often found in conventional EIA, scholars are looking to innovative new ways of thinking, often termed "next generation assessment" [Johnston, 2016; Gibson et al., 2015]. "Next generation EIA is broad, value-driven, aspirational, and inclusive. It is about advancing sustainability while protecting the things we value, and increasing fairness in the distribution of benefits and burdens" [Johnston, 2016, p. 5]. This advanced model of EIA adopts an integrated approach to planning and decision making that incorporates civic values and emphasise public participation to address broad sustainability issues at project, program, or policy level [Sinclair et al., 2018].

Through innovative tools and advanced strategies, next generation EIA aims to operationalise the overarching goal of sustainability while dealing with the concurrent and any possible future challenges [Johnston, 2016; Hockenstein, 1997]. The foundation of next generation EIA lies in sustainability that accentuates the protection and amplification of the resilience of biophysical, socio-ecological, and human systems [Johnston, 2016; Gibson et al., 2015]. Deliverance of strong yet positive contribution towards enduring wellbeing through deliberative decision making while mitigating significant adverse effects at the program, policy, and project levels is the core purpose of next generation EIA [Gibson et al., 2015]. The advocates of the next generation EIA aim to ameliorate public participation in decision making

that not only fosters mutual learning but also builds the capacity of participants to ensure enduring wellbeing.

2.3.2 Components of next generation EIA

Next generation EIA is a broad and inclusive concept that encompasses multiple traits, such as sustainability assessment, cumulative effect assessment, learning, meaningful public participation, linkages beyond assessment, follow-up and monitoring, etc. [Johnston, 2016; Gibson et al., 2015]. Next generation EIA thinking provides intriguing possibilities for improving CBEA performance and ramping CBEA to a new level. In order to achieve the overarching goal of enduring wellbeing, it is suggested that next generation EIA must include a holistic sustainability-oriented assessment that integrates economic, environmental, and social impacts, consider enduring wellbeing through the equitable distribution of benefits, include participatory decision making through deliberations, follow-up and monitoring of project impacts, and ultimately establishing a culture that is interested in learning about ways to achieve sustainability that serves community interests.

2.4 Next generation CBEA

Next generation CBEA is community driven and has roots in community development, consistent with CBEA. Like the evolution of EIA away from the conventional expert-driven rationalist approaches, next generation CBEA aims to have at its foundation collaboration with community members, non-profit or community-based organisations, EIA experts and local administrators (relevant government departments). Together they assess their collective needs, priorities and local sustainability issues in relation to local impact assessment decisions [Spaling, 2003; Glick et al., 1996]. This advanced approach to CBEA strives to create space for collaboration, negotiation, and transformation within which community members feel empowered to engage in a change-making process [Spaling, 2003].

Table 2.1 shows the characteristics of conventional EIA, CBEA, and next generation CBEA in this context. From the table it is clear that the notion of next generation CBEA (Column 3) is in close relationship with CBEA (Column 2) in fact, it builds on the foundation of CBEA.

Table 2.1 Conventional EIA, CBEA and next generation CBEA

Conventional EIA	CBEA	Next generation CBEA
Reductionistic and rational approach	Community-development constructs	Community-development constructs
Proponent-driven	Community-driven	Community-driven collaborative approach
Top-down	Bottom-up	Bottom-up
Western scientific and expert-based information	Traditional knowledge, lived experience, local values	Co-production of knowledge based on science and traditional knowledge, lived experience, and local values
Project centred	Focuses on biophysical as well as socioeconomic and cultural aspects	Sustainability oriented
Methods: Data-driven (Use of sophisticated methods, such as GIS, lab testing, etc.)	Methods: PRA tools (Participatory mapping, seasonal calendars, narratives, etc.)	Methods: A variety of methods that include PRA tools and some scientific methods
Limited scope for meaningful public participation	Active engagement of participants in CBEA	Meaningful public participation
For large-scale complex projects (e.g., nuclear power plants, highway constructions, etc.)	For small-scale development projects (e.g., check dams, small-scale irrigation, etc.)	For small-scale development projects (e.g., check dams, small-scale irrigation, etc.)

Next generation CBEA in this context focuses on the principal goal of sustainability, which is advocated and supported by leading-edge practitioners in the field of EIA [e.g., Sinclair et al., 2017**;** Gibson et al., 2015; Spaling et al., 2011; Spaling, 2003**]** and is a goal of the government of Kenya [Kenya gazette supplement acts, 2015] and many other governments worldwide. Sustainability-oriented environmental assessment emphasises the integration of human and biophysical factors and the inclusion of locally appropriate decision making that addresses the local needs and priorities [Hunsberger et al., 2005]. Further, Tang and Zhao [2011] advocate for community-led stewardship, critical to sustainable development, due to community members' proximity to local environmental problems as well as connections with potential solutions.

Given the current shortcomings of CBEA and the potential of next generation approaches to address community-based sustainability issues, I considered some key attributes of the next generation EIA in order to build a conceptual framework for next generation CBEA.

2.4.1 Components of next generation CBEA

Environmental sustainability is the primary objective as an outcome of any developmental projects in Kenya. The role of EIA is critical in ensuring sustainability through environmental regulations that guide policymakers, planners, proponents, stakeholders, etc. to make environmentally as well as economically sustainable decisions [The Environmental Regulations, 2003, NEMA, 2020]. According to the regulations, EMCA, 1999 ensures environmental protection through mandatory EIA of all the designated project types, environmental audit and monitoring, and environmental restoration and conservation orders.

After analysing the major challenges of CBEA that many African countries face and considering the various other aspects, such as local context and the legal aspects of consequence to my case study country Kenya, I considered four elements of next generation EIA particularly pertinent to CBEA in the Kenyan context that need to be addressed for achieving the next generation CBEA: i. a comprehensive approach that incorporates the pillars of sustainability, not just environmental sustainability, ii. The incorporation of a deliberative approach to CBEA planning and decision-making processes that includes meaningful public participation and fair representation of individuals irrespective of gender and class to counteract the power imbalances, iii. A locally-driven environmental management plan for an effective follow-up and monitoring, and iv. Processes throughout the CBEA that promote a learning environment where communities learn through the EIA decision-making process and the decisions made. Though these components were the core of the next generation CBEA frame I implemented some other components, such as climate change and consideration of alternatives are very much part of the next generation frame.

2.4.1.1 Sustainability

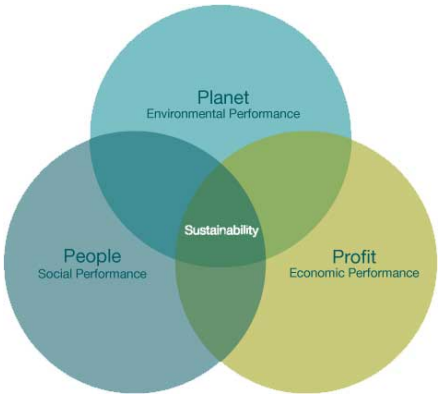
Sustainability has become the underlying objective of environmental assessment in recent times. The concept of sustainability, which emerged in the 80s after the IUCN' s "World Conservation Strategy" and Brundtland Commission report on sustainable development, primarily aims for an environmental, social, and economic enduring wellbeing without significant trade-offs. Since then, the concept of sustainability in EIA has evolved many times until now.

In the 1990s, the concept of sustainability was perceived rather from a conservative perspective which was about the preservation of ecological systems and functions while EIAs

were expected to predict potential environmental impacts of proposed human actions and forecast mitigation measures for the same in terms of projects or policy to keep decision-makers informed [Spaling et al., 1993]. Sustainability was interpreted in terms of becoming less wasteful of natural and human resources, and maintenance of the functional integrity of the ecosystem was emphasised to maintain biological productivity as well as to remain resilient to any kind of anthropogenic stress [Cole, 1998]. Gibson et al., [2005] and Marsden [2008] argue that targeting environmental sustainability is not sufficient to achieve overall sustainability as the concept of 'sustainability' is multifaceted and is built on complex interactions between diverse environmental, social, and economic factors. Regardless of the reductionist approach of (environmental) sustainability, it was clear that sustainability is beyond just environment, which must embrace the social and economic dimensions and must be integrated into EIA [Cole, 1998; Lawrence, 1997; Spaling et al., 1993].

One of the most popular models of this generation EIA was the triple bottom line or three pillar model that was conceptualised in the early 2000s. This popular model, which has been widely recognised across the world tends to focus on the three domains, such as the planet, people, and profit while sustainability is at the intersection of the three domains. This model fits well with the conventional EIA's capacities as well as with experts in the three different domains (i.e. environment, social, and economic). Nonetheless, this widely accepted popular model was criticised by many scholars for its weak integration capacity, failure to recognise the interdependency among the three domains, and for its assumption of sustainability as a balancing factor that encourages only trade-offs [Gibson, 2006a].

Figure 2.1 Triple bottom line model Source: http://riversidediscovered.com/triplebottomline/



Environmental Assessment (EA)-driven integrated assessment and objective led assessment are the two other distinct EIA approaches, which claim to have better integration and

all the spheres of sustainability. Critiques of EA-driven integrated assessment approach [e.g., Sala et al., 2015; Huge et al., 2013; Morrison-Saunders & Therivel, 2006] explain how this approach is one of the least integrated within the spectrum of approaches for integration which endorses competing interests instead and promotes trade-offs at the expense of the environment. On the one hand, the objective-led IA is considered to be win-win-win outcomes in all the three spheres (i.e. environmental, social, and economic) [Morrison-Saunders & Therivel, 2006; Pope et al., 2004], on the other hand, Therivel et al. [2009] discuss the limitations of this approach towards the contribution to sustainability where socioeconomic objectives supersede the environmental objective.

Next generation EIA and sustainability

Sustainability is at the core of next generation EIA, which aims to direct decision making towards a sustainable future through the assessment of potential impacts of current actions [Pope et al., 2017; Bond et al., 2015; Bohunovsky et al., 2011; Hugé et al., 2011; Bond & Morrison-Saunders, 2009]. The sustainability component in this next generation EIA context was largely drawn from the literature of sustainability assessment (SA).

The next generation assessment for sustainability, unlike the triple bottom line or EA-driven approach which consider the three pillars of sustainability in a manner that encourages trade-offs, encompass state-of-the-art thinking and considers the system as a whole rather than three different spheres that aspire to deliver net sustainability gains [Bond et al., 2012]. The notion of next generation EIA in this context was very much society driven, unlike the proponent-driven integrated assessment or the state-driven objective-led IA, where the assessment echos a given society's vision of sustainability [Pope et al., 2005]. The next generation assessment for sustainability aims to determine whether an initiative or proposed project is sustainable or not unlike some of the above-mentioned models, which tend to determine how to minimise the adverse impacts through mitigation measures or how to create positive impacts as per the baseline conditions [Pope et al., 2017; Sala et al., 2015; Pope et al., 2005].

Assessment for sustainability is forward looking, which is much broader, integrated (to the extent to which various techniques are combined) as well as comprehensive (entails all the potential direct and indirect effects of the three spheres) [Bond et al., 2012]. Gibson [2006a] justifies sustainability in terms of interconnectedness and interdependencies and encourages its

enforcement from planning to the decision-making stage to achieve mutually reinforcing gains in all spheres. Gibson [2006a, 2006b, 2013] further encourages to avoid trade-offs while emphasising integration than balancing of trade-offs. Next generation assessment, therefore, establishes guidelines that discourage trade-offs, emphasises mutually reinforcing gain for sustainability in all the spheres while mitigating significant adverse impacts, and emphasises both ex-ante and post evaluating process [Pope et al., 2017; Gibson et al., 2015; Sala et al., 2015; Bond et al., 2012; Gibson 2006a, 2006b, 2013; Pope et al., 2005].

Regardless of potential benefits, assessment for sustainability has some of its own challenges. The ideal approach of assessment is expected to have expansive stakeholder engagement strategies as well as significant time and resources. Further, this next generation assessment approach has the challenge to meet the sustainability at the macro level while practicing it at the micro level [Grace & Pope, 2015].

Next generation assessment is, however, still evolving and has been appreciated and accepted by many scholars and practitioners in this field (e.g., Sinclair et al., 2018; Gibson et al., 2015). Nonetheless, it has certainly the capacity and credibility of EIA from just a rationalist technocratic model to a more comprehensive one with sustainability at its core [Morgan, 2012]. For the next generation CBEA frame, the key points from the assessment for sustainability were considered including integration and avoidance of any kind of trade-offs.

2.4.1.2 Meaningful public participation

Public consultation or participation is one of the core elements of an EIA process. For a long time, the leaders in this field have been advocating for just public participation or stakeholder engagement for fair decision making. The existing practices of public participation in EIA vary from mere information sharing to consultation (also quasi-judicial model a variant of consultation practiced largely in Canada) and in some context to collaboration (stakeholders engage in an interactive process that ensures incorporation of their comments and views into the decision making) [Joseph et al., 2015].

Public participation in EIA prior to 2000 was poor and had many obstacles, such as access to information, or only partial information, limited presence of a technological system for feedback, and dependency on letters for input. Many countries did not have the provision of public participation in the early planning stage and it was very limited to the later stage with minimal and distorted public input [Bansgrove, 1991; Hollick, 1986; Elder, 1982]. Public

participation was used to defend already-made decisions or to placate the public by soliciting their opinions [Shephard & Bowler, 1997]. Soon, the necessity for more discursive forms of decision making was felt, for example, the notion of "experts know best" approach where there was very limited space for public engagement [Bond et al., 2004].

With sustainability gaining momentum, public participation has become one of the pre-requisites in EIA. Building consensus in decision making was considered important and therefore, stakeholder engagement in collaborative decision making became part of EIA [Coelho et al., 2010; Doelle & Sinclair, 2006; Lane & McDonald, 2005]. Gradually, from merely a process of interaction among various stakeholders [Udofia et al., 2015; Spaling et al., 2011; O'Faircheallaigh, 2010], public participation has evolved to be more meaningful that captures elements such as adequate notice and time, integrity and accountability, inclusiveness and adequate representation, active engagement of people through the exchange of ideas, ability to influence decisions, a fair share of information and communication, fair and open dialogue, shared decision making, early and learning-oriented participation at normative and strategic levels besides operational level [Sinclair & Diduck, 2016; Sinclair et al., 2015; Sinclair et al., 2012; Stewart & Sinclair, 2007; Sinclair & Fitzpatrick, 2002].

Regardless of the evolvement of the meaning and level of public participation in EIA, many scholars in this field believe that there is still considerable space for improvement for an advanced level of participation in decision making which may be more analytic and deliberative [Diduck & Sinclair, 2016; Sinclair & Diduck, 2016; Spaling et al., 2011; Petts, 2003].

Meaningful public participation in next generation EIA

In addition to quality, transparent and credible involvement of participants, public participation in next generation context aims for civic legitimacy while strengthing civic capacity [Sinclair & Diduck, 2017; Gibson et al., 2015; Rozema et al., 2012; Videira et al., 2010]. Public participation in the next generation context is more than just a social interaction rather it is a deliberative process to decision making which is facilitated through dialogues, discourse, and exchange of ideas. This approach is designed to produce reasonable opinions by capturing participants reflections in a non-coercive manner. Armed with good information to deal with complex environmental and sustainability challenges, participants have the option to improvise their preferences in light of discourses and discussions [Healy, 2011; Videira et al., 2010; Hogan & Tell, 2006; Wiklund, 2005; Chambers, 2003]. Parkins and Mitchell [2005] justify the

deliberative approach to decision making for public discourse, reflections, and informed public opinion, which is beyond a tool for improved decision making. Meaningful participation is ensured through deliberative decision making while participation complements deliberation by helping in curbing the monopoly of certain groups or individuals through information sharing and fostering democratic and civic process [Dryzek, 2000; Rossi, 1997]. Fischer [2006] considers that the deliberative approach to decision making is democratic and a radical step towards civic legitimacy where participants are empowered with the knowledge to engage in reason-based and action-oriented decision making.

2.4.1.3 Follow-up and monitoring

Follow-up and monitoring are critical in ensuring appropriate management of projects through verification of the veracity of the predicted potential project impacts and the efficacy of mitigation measures to ensure appropriate measures are taken as required [CEAA, 2012; Morrison-Saunders et al., 2003]. Monitoring of ongoing project activities and ex-post evaluation (or EA auditing) are the key important aspects of follow up [Spaling et al., 1993]. Follow-up and monitoring significantly contribute to the achievement or failure of a project or program [Appiah-Opoku & Bryan, 2013]. Regardless of its importance, follow-up and monitoring in EIA are often criticised for being neglected.

Follow-up in EIA was perceived as a regulatory mechanism prior to 2000 where federal or provincial agencies were expected to scrutinise whether or not project development, operations, and abandonment stages complied with specific required rules [McCallum, 1987]. Follow-up had limited scope as project proponents largely focussed on project implementation and the focus of EIA was to identify and mitigate environmental impacts [Petts & Eduljee, 1994]. Based on the principle of self-assessment (for proponents) without mandatory enforcement, any environmental agency could do little to ensure that responsible project proponents would follow the appropriate procedures and would comply with the required regulations [Harrington & Canter, 1998; Morrison-Saunders, 1996; McCallum, 1987]. Nonetheless, follow-up and monitoring were less desirable for the implementing agencies due to lack of enough funding, capacity, and time [Harrington & Canter, 1998].

Despite its importance, follow-up and monitoring are still yet to be mandated in many countries including the US at present [Appiah-Ppoku & Bryan, 2013; Bjorkland, 2013]. Without a stringent policy, follow-up and monitoring activities in EIA are not efficient in terms of

producing effective actions for mitigations or learning from any kind of published results and are not necessarily subject to public scrutiny [Bjorkland, 2013]. Unlike the US National Environmental Protection Act, which lacks monitoring of longer-term effects or post-closure follow-ups [Bjorkland, 2013], some developed countries (Canada, Portugal, the Netherlands, etc.) have however made follow-up and monitoring mandatory in EIA [Morrison- Saunders et al., 2003].

Follow-up and monitoring in next generation EIA

Monitoring, response to the findings of a project or a program, communicating those findings, and learning are the four elements of follow-up in next generation EIA [Gibson et al., 2015; Noble & Birk, 2011; Morrison-Saunders et al., 2003]. Follow-up in next generation EIA has a clear mandate of what should be monitored, analysed, managed, and communicated. As regulatory and institutional arrangements are integral to comply with the law, follow-up and monitoring must be central to the next generation context. This next generation component emphasises a good source of information through systematic monitoring of both direct and indirect impacts [Appiah-Ppoku & Bryan, 2013; Bjorkland, 2013]. In order to make a positive impact on the society through addressing key sustainability issues, follow-up in next generation EIA employs a collaborative approach among proponents, regulators, and communities where responsibilities are shared [Morrison-Saunders et al., 2014]. Advocates of the next generation EIA argue for effective engagement of local communities in the follow-up process to deal with various environmental changes as well as project impacts, which not only build the capacity of the participants but also generate trust among the stakeholders for a better-quality assessment process advancing towards sustainability [Noble & Birk, 2011]. Morrison-Saunders et al [2014] recommend an adaptive format of follow-up to accommodate the continuously changing sustainability concept while emphasising the monitoring of trade-offs and hence they further suggest the participation of local communities in the post-project follow-up that may contribute to inter-generational equity.

2.4.1.4 Learning

The contribution of learning is widely recognised to aid in effective governance for sustainability outcomes [Sinclair et al., 2011; Sinclair et al., 2008]. Learning aims for a shift in behaviour and values towards sustainability for a better future through knowledge and skill acquisition and capacity building [Sánchez & Mitchell, 2017; Spaling et al., 2011]. Learning can

take place in a collaborative environment and is fostered by deliberative decision-making processes where multiple participants communicate and share their experiences and also participate in sustainability discourse [Armitage et al., 2008] and EIA is known to provide such platforms [Spaling et al., 2011; Sinclair et al., 2008].

Prior to the 2000s, the scope for public participation and follow-up were limited in EIA and so was the scope for learning [Palerm, 1999]. There were obstacles, such as rigid institutional barriers to following specific blueprints rarely had any provisions for learning [Olsen & Christie, 2000]. However, the Scandinavian examples explain that a collaborative approach to environmental problem-solving through learning and civic discovery help bridge communication barriers and promote better understanding among stakeholders [Saarikoski, 2000; Hoivik, 1997]. While the collaborative approach in EIA was appreciated, the issues of power, inequality, distrust, and fears, on the other hand, became a matter of concern [Saarikoski, 2000].

Learning in next generation EIA

Advocates of next generation EIA emphasise learning, which may contribute to building the capacity of individuals as well as communities for a better assessment and may encourage the participants to embrace sustainability. Learning through meaningful participation is integral to next generation EIA [Jones & Morrison-Saunders, 2017; Johnston, 2016; Gibson et al., 2015; Sinclair et al., 2015; Sinclair et al., 2011; Sinclair et al., 2008]. Next generation EIA adopts a collaborative approach to learning that is experiential and reflective, a learning-by-doing process where various stakeholders engage in planning, assessment, and evaluation of a project or program or policy to address various socio-ecological issues for a sustainable future [Armitage et al., 2008]. Meaningful participation, as well as follow-up and monitoring that facilitate learning [Sánchez & Mitchell, 2017; Portman, 2009] and the learning from follow-up and monitoring, is fed back into future assessment [Sánchez & Mitchell, 2017; Gibson et al., 2015; Sinclair et al., 2008].

Rather than the passive way of learning in a formal or regulatory way, next generation EIA adopts a participatory way of learning which is facilitated by inclusive methods [Sánchez & Mitchell, 2017; Keen & Mahanty, 2006]. As described earlier, the deliberative approach to decision making, which is integral to next generation EIA, provides space for discourse where stakeholders exchange their ideas and share information, which may lead to moral and

intellectual development to help them become better citizens [Fitzpatrick et al., 2008]. It is also argued that critical learning outcomes achieved during the different phases of EIA may contribute to behavioural and cognitive changes that are signs of sustainable development [Sinclair et al., 2011; Marschke & Sinclair, 2009; Sims & Sinclair, 2008]. Table 2.2 provides a summary of learning in the next generation EIA, which is largely adopted from the scholarship of Sánchez and Mitchell [2017].

Table 2.2 Learning-oriented next generation EIA **Source:** [Sánchez & Mitchell, 2017, p. 201]

Conventional impact assessment process ⟶	Screening	■ Scoping ■ EIS Review ■ Public consultation/ hearing	Follow-up and monitoring
Learning-oriented next generation EIA ⟶	■ Public and stakeholder participation in the Identification and mapping of ecosystem services ■ Joint assessment of risks and opportunities ■ Early engagement of participants	■ Participant engagement in planning and designing (where it is possible) ■ Collaboration between environmental, social, and economic experts to avoid significant trade-offs ■ Development of mitigation measures where stakeholders' inputs are incorporated	■ Adaptive management ■ Shared responsibility and participatory monitoring ■ Long-term and post-project monitoring ■ Sharing and reporting of findings from monitoring

Diduck [2010] elucidates that learning at an individual level occurs in a social setting and is profoundly ingrained in socio-cultural norms. Learning in a social context helps in reflecting on human actions and the influence on the environment that can lead to changes in social actions that are supportive of sustainability [Sinclair et al., 2011; Keen et al., 2005]. CBEA takes place within a social setting where multiple participants share different values and beliefs and socio-cultural practices, which sometimes may lead to conflicts and tensions. Brown et al. [2005] argue that social learning has the potential to resolve resource dilemmas for sustainable development and therefore, Blackmore [2007] emphasises the potential of social learning over individual learning. As one of the objectives of this research was to examine the relationship between

CBEA and social learning, hence the next section explores the concept of social learning in the natural resource management context.

Social learning

Many of the development programs in myriad African countries failed to achieve the desired outcome because of the lack of public participation. Zewde [2010] advocates for a social learning approach that facilitates the priorities and needs of local people, collaborates with experts from different fields, creates opportunities for people to learn, and build their capacities leading to empowerment and the entire approach is appreciated and encouraged for its transparency and democratic way of decision making. Social learning in natural resource management is acknowledged widely for its multidimensional constructs where participation as part of the process and change as learning outcomes are integral [Rodela, 2014]. Social learning in natural resource management has evolved from merely being a tool to help resolve environmental issues to what Pahl-Wostl et al [2008] call "sustainable learning".

Social learning theory

The roots of social learning theory can be traced in the discipline of psychology where social learning was used to understand behavioural changes in humans. The theory of social learning suggests that human behaviour is subject to external influences such as the interaction between cognitive, behavioural, and environmental determinants [Blackmore, 2007; Rodriguez & Vergara-Tenorio, 2007; Bandura, 1977], however, direct and practical experience are considered as the deciding factors for people what they desire to change from their learning [Bommel et al., 2009; Pahl-Wostl, 2006; Koelen & Das, 2002; Bandura, 1977]. As social learning deals with personality and change, it is also argued that it is expected to predict and influence human behavior efficiently [Rotter, 1982]. It is evident that social learning theory in its initial stage predominately focussed on individual behaviour and what drives that behaviour towards change, which was seen as limitations by Maarleveld and Dangbegnon [1999] who explain that the context certainly influences human behaviour, however, many times people are crucial in framing the context.

Social learning in natural resource management

Prior to the 1990s, in order to address socio-ecological complexity, a learning-oriented adaptive management approach was recommended, where learning in this regard was guided by systems thinking, experimentation, and communicative rationality [Maarleveld & Dangbegnon,

1999], against the traditional reductionist, top-down approaches to problem solving, which was proved to be inefficient [Cundill & Rodela, 2012; Finger & Verlaan, 1995].

With sustainability becoming a global ethic and normative goal, the need for an advanced approach to resource management is required to understand the complex interrelations between society and the environment [Harris & Deane, 2005; Keen et al., 2005]. Social learning in the context of resource management is now perceived as a tool for social change through a robust process of facilitation of public participation, information sharing, deliberations, reflections, and collective actions that may lead to sustainable development [Reed et al., 2010; Dyball et al., 2007]. Tilbury [2007] argues that social learning is much more than just understanding the interrelation between society and the environment but it is about challenging the status quo of many unsustainable approaches through reflections, skill and capacity building, adopting participatory approaches that enable change as well as acknowledging and accepting plurality and diversity in collective action and decision making. Wals and Rodela [2014] rightly argue that sustainability is not a destination to arrive rather it is a journey that is constantly evolving through learning that requires continuous reflection on our actions and monitoring of the anticipated as well as unintended outcomes.

Social learning in current times has moved beyond just public participation or learning in a social context to a process which is a multi-dimensional construct, that involves much in-depth understanding of various socio-ecological issues through negotiations leading to anticipated outcomes either at an individual or collective levels, and occasionally paves the way to transformative changes [Suskevics et al., 2017; Rodela, 2014; Fernandez-Gimenez et al., 2008; Bouwen & Taillieu, 2004]. Social learning in current times adopts an active approach such as deliberations and discourses where actors engage in arguments and exchange of ideas which may bring a cognitive change against a passive one where participants get information through social interaction or from different sources [Reed et al., 2010; Glasser, 2007]. An active social learning process may not necessarily change public values, nonetheless, it contributes to change in attitude towards each other through mutual understanding while finding a common ground that transcends narrow self-interest which further helps in making substantive decisions [Schusler et al., 2003]. Table 2.3 summarises the evolvement of the social learning approach.

The evolvement of social learning is not restricted to its active process only but it also influences the learning outcomes. Most learning happens in some sort of social context with or

without any planning or effort, however, it is the outcome that makes social learning stand out from others. It is argued that learning does not necessarily lead to any outcome or change; on the other hand, advocates of social learning argue that social learning outcome may be seen in terms of change in understanding or attitude among the actors involved where change transcends the individuals and extends to the wider social network through information sharing and transmission of knowledge gained through active social learning processes [Benson et al., 2016; Hoverman et al., 2011; Reed et al., 2010].

The operational dimension of social learning is crucial for experiencing tangible change resulting from social learning. The social learning literature talks about change at cognitive, moral, relational, and trust levels [Rodela, 2014; Rodela, 2011; Webler et al., 1995], however, the recent development in social learning tends to focus on the operational part of social learning. Changes at the individual, collective, and systemic levels are considered to be important to the operational dimensions of social learning in recent times [Suskevics et al., 2017].

Table 2.3 The evolving of social learning in different decades **Source:** [Cundill and Rodela, 2012]

Social learning in the context of NRM	Actors involved	Process that facilitates learning	The outcomes
Adaptive management (1970s and 1980s)	Scientists/ researchers and decision makers or policymakers	Experimental, joint action, monitoring, reflection, systems thinking	Resolve problems and improve decision-making.
Collaborative management (1990s)	Multiple actors including researchers, decision-makers, and people	Collaboration, inclusion, civic participation, knowledge sharing, deliberation	Collective thinking and action, common concern for the environment, and improved decision-making for the ecological crisis.
Adaptive co-management (2000s)	Multiple actors	Communicative action, joint practices, collective action, democratic process, open and transparent decision-making process, discourse and deliberation	Improved decision making, changes in values and perceptions, and collective action.

In recent times (Post 2010s)	Multiple actors	Capacity building, multi-loop process, Collective actions and iterative reflections, monitoring of actions, and sharing of information.	Understanding the interrelations between environment, society, and economic systems, challenging unsustainable models of development, sustainable practices, and occasional transformative change.

Operational dimension of social learning

Individual level

Tangible outcomes of social learning at the individual level and reasonably at collective levels are built on mainly cognitive change, relational change, moral development, and trust building. Cognitive changes are widely acknowledged in the social learning literature and entail mainly (1) acquisition and co-creation of knowledge, and (2) increased understanding of a problem [Suskevics et al., 2017; Rodela, 2014; Webler et al., 1995]. Relational changes focus on (1) change in attitude towards each other, and (2) change in relationships [Suskevics et al., 2017; Rodela, 2014]. Gaining skills, change in practices, and moving beyond self-interest leading to improved civic virtue are part of the moral development outcome [Suskevics et al., 2017; Rodela, 2014; Webler et al., 1995]. The last tangible social learning outcome is increasing trust level through social interactions which contribute to mutual understanding and sorting out differences [Rodela, 2014].

Collective levels

Communal action is the other tangible outcome at collective levels, which is expected once knowledge is acquired and trust is built [Reed et al., 2014]. However, it is challenging to establish a direct link between social learning and collective action. Change at the communal level can be manifested through (1) expansion or change in networks, and (2) collective action [Suskevics et al., 2017]. Through their case studies from different parts of the world, Rist et al. [2007] confirm the outcome of social learning in terms of change in the network; however, they

warn that finding collective action as a learning outcome is not common. Citing the example of the US where Suskevics et al. [2017] observed the early sign of empowerment of marginalised communities through structural change and they further explain that action orientation may not necessarily always trigger action.

Systemic levels

Institutional, structural, or policy change are part of systemic change. Structural change is related largely to management that deals with operational decision making whereas the change in policy or institution captures changes in policy discourse [Suskevics et al., 2017]. Due to the nature of this research, which is mainly community focussed, systemic change was not considered relevant.

Limitations

Local context is an integral part of social learning in natural resource management as most environmental issues are a human-social construct, which is also largely shaped by its socio-political and cultural history [Fernandez-Gimenez et al., 2008; Andrew & Robottom, 2005]. Cundil and Rodella [2012] argue that despite its importance, local context in social learning has not been adequately addressed.

Change as learning outcomes is considered the 'holy grail' in social learning, which differentiates social learning from any other learning [Benson et al., 2016; Muro and Jeffrey, 2008]. However, social learning literature does not explicitly spell out what leads to change [Suskevics et al., 2017; Reed et al., 2010; Schusler et al., 2003].

Ensuring social learning in terms of the outcome can be controversial. The dilemma of achieving social learning widely exist where Reed et al. [2010] criticise the claims made by many projects who merely had facilitated participation without any empirical evidence of social learning. Bull et al. [2008] from their English experience on waste strategy explain that the impact of learning on individuals is relative and varies, where not every individual necessarily goes through any major transformative change. Though some researchers have explained social learning outcomes through loop learning[3] (e.g., Armitage et al., 2008; Maarleveld & Dangbegnon, 1999), the issue of scaling-up from the individual to collective levels, however, is not adequately addressed in the social learning literature.

[3] Social learning can be explained through single-loop (fixing errors from routines), double-loop (correcting errors by adjusting values) and triple-loop (designing governance norms and protocols) [Armitage et al., 2008, p. 88].

The next generation CBEA in this context was an organised process, which was designed in a way to facilitate social learning and to further the assessment process. As CBEA is about smaller community-based projects, hence, the role of local context was critical. This research provided a platform to explore the role of local context in social learning. As social learning includes both process and outcome and the CBEA emphasised a robust process to carry out an assessment that was designed to be highly participatory and engaging, it was worth exploring the various learning outcomes as well as the motives behind any tangible change that might have occurred during the process.

2.5 Chapter Summary

After the failure of many development projects, the need for EIA was strongly felt in Africa to protect its vast natural resources. In recent years, EIA has become the normative objective of many development initiatives, especially those that are funded by global organisations such as the world bank. However, in some cases, EIA was considered to be either inefficient without the proper expertise or misfit for relatively smaller rural development projects. Hence, CBEA was suggested as an alternative for smaller community-based development projects in Africa.

CBEA, which has the foundation on participatory approaches, is relatively new to Africa. Despite a newer concept, CBEA has tasted some success in east Africa. However, public participation is still a challenge for CBEA. The need for an efficient and effective CBEA is strongly felt to maximise its contribution towards sustainability and wellbeing.

To overcome the above-mentioned shortcomings and address sustainability issues, I propose the next generation CBEA, which has the foundation on the principal goal of sustainability. The next generation CBEA has four main components which are sustainability, meaningful public participation, follow-up and monitoring, and learning. All the four components have their latest versions based primarily on relatively recent literature.

Social learning is pertinent to this context as both CBEA and social learning are communal. Social learning in recent times emphasises (1) a process that employs an active approach where learning happens through deliberations, discourse, and exchange of ideas and (2) outcomes that can be measured at various levels.

Chapter 3
Research Methods

"In much of society, research means to investigate something you do not know or understand" (Neil Armstrong, N.D.).

3.1 Introduction

Chapter 3 begins describing the research paradigm, followed by the research design. The subsequent section discusses the research approach and the strategy I followed to carry out my research. Next is a detailed description of the data collection procedures and tools I used to generate data, followed by a discussion of the data analysis process. In addition to the research methods, I have also shared the layers of administrative formalities and organisational approvals I had to obtain to conduct this research. I conclude this chapter with a discussion on the limitations of the research.

In community-based participatory research, the role of academic researchers and communities has been well discussed and debated. Often academic researchers have the privilege, power, and status not only within their academic environment but also in the regions they work or the communities they conduct research with [Muhammad et al., 2015]. Sometimes the social status and stature including class, gender, racial/ethnic backgrounds or any other identity positions play an important role in shaping the research process and outcomes.

Since "research is a process and not just a product" [England, 1994, p. 244], where researcher is the main instrument of data collection, the social identity including the worldviews of researchers is imperative in shaping the research process and outcomes. Here I provide a brief account of my own social identity and experiences that consciously or subconsciously helped me shape my research.

My research was cross-cultural research since my (complex) social identity and worldviews were different from the local researched communities in Kenya. I am an Indian born and raised, partially educated in the UK, who was pursuing a PhD in Canada and was going to conduct research in some rural communities in Kenya. Nevertheless, I was a cultural outsider [Manohar et al., 2017], who had not experienced the local culture and traditions including the local language and local cultural context. Muhammad et al. [2015] suggest that this situation cab

create a small advantage in that and researcher like myself has less potential for bias which many cultural insiders carry with them.

My years of experience in the non-profit sectors in India, especially working with many marginalised communities, lived experience in the UK and Canada and limited exposure with the Mayan communities in Belize helped shape my positionality within the research context, which I remained conscious about. My previous cross-cultural research background in different parts of India, including ethnographic research in the fishing communities, helped me to be vigilant about the local power dynamics, and find some cultural commonalities between me and the communities [Manohar et al., 2017; Ramji, 2008]. My hiring of local research assistants was the part of my research plan in terms of helping to temper the cultural insider-outsider issue [Manohar et al., 2017]. I also hired two female research assistants to help overcome some of the obvious gender barriers of being a coloured man and outsider [Muhammad et al., 2015; England, 1994]. Also, since I did not want to parachute into the field and start research directly, I decided to stay in the respective communities to develop better understanding of the local context, finding cultural commonalities, and build trust among the community members prior to the onset of my actual research.

3.2. Research paradigm

A research paradigm is a set of beliefs embraced by a researcher that helps to guide the research activity (Creswell, 2013). These beliefs reflect the researcher's thinking about the nature of reality, the ways knowledge can be generated, and how data may be accessed (Tuli, 2011). Various social science researchers have established different research paradigms. Given the nature of the proposed research, there were two aspects of my research paradigm. First, the CBEA itself is participatory, involving community members in designing and conducting an environmental assessment and eventually evaluating the entire process. Second, the research purpose and objectives are also largely participatory.

A participatory paradigm is based on notions of participation and participative realities, with an emphasis on the subjective-objective reality that is co-created by people in relation to their surrounding environment [Lincoln et al., 2011; Heron & Reason, 1997]. Research from a participatory paradigm advocates for actions to help marginalised communities to fight against the issues of power or social injustice, discrimination, disempowerment, inequality, oppression, suppression, domination, and alienation [Creswell, 2013, 2014]. The notion of implementing the

next generation CBEA was to examine the potential of the approach for empowering participants through the sharing of knowledge and building their capacity in an inclusive and participatory way.

Unlike some research where knowledge production happens within the boundary limit of the ivory tower [Castleden et al., 2012], the very foundation of this research was based on collaboration with community members and local institutions to co-produce knowledge for mutual benefits and to address local sustainability issues. For example, the knowledge co-produced during the CBEAs were useful for furthering the EA process, writing reports to fulfill the legislative requirements, and for my PhD research. Heron and Reason [1997] further elucidate that the epistemology of a participatory paradigm emphasises multiple ways of knowing, which requires participation, face-to-face meetings, and dialogue, in a culture of shared values, beliefs, and societal norms. A participatory paradigm favours face-to-face learning and learning new things through the application of knowledge [Lincoln et al., 2011]. A participatory research paradigm was appropriate for this research due to the continuous engagement of participants in a collaborative environment in the co-production of knowledge and in the practical application of knowledge conducting the CBEAs.

3.3 Research design

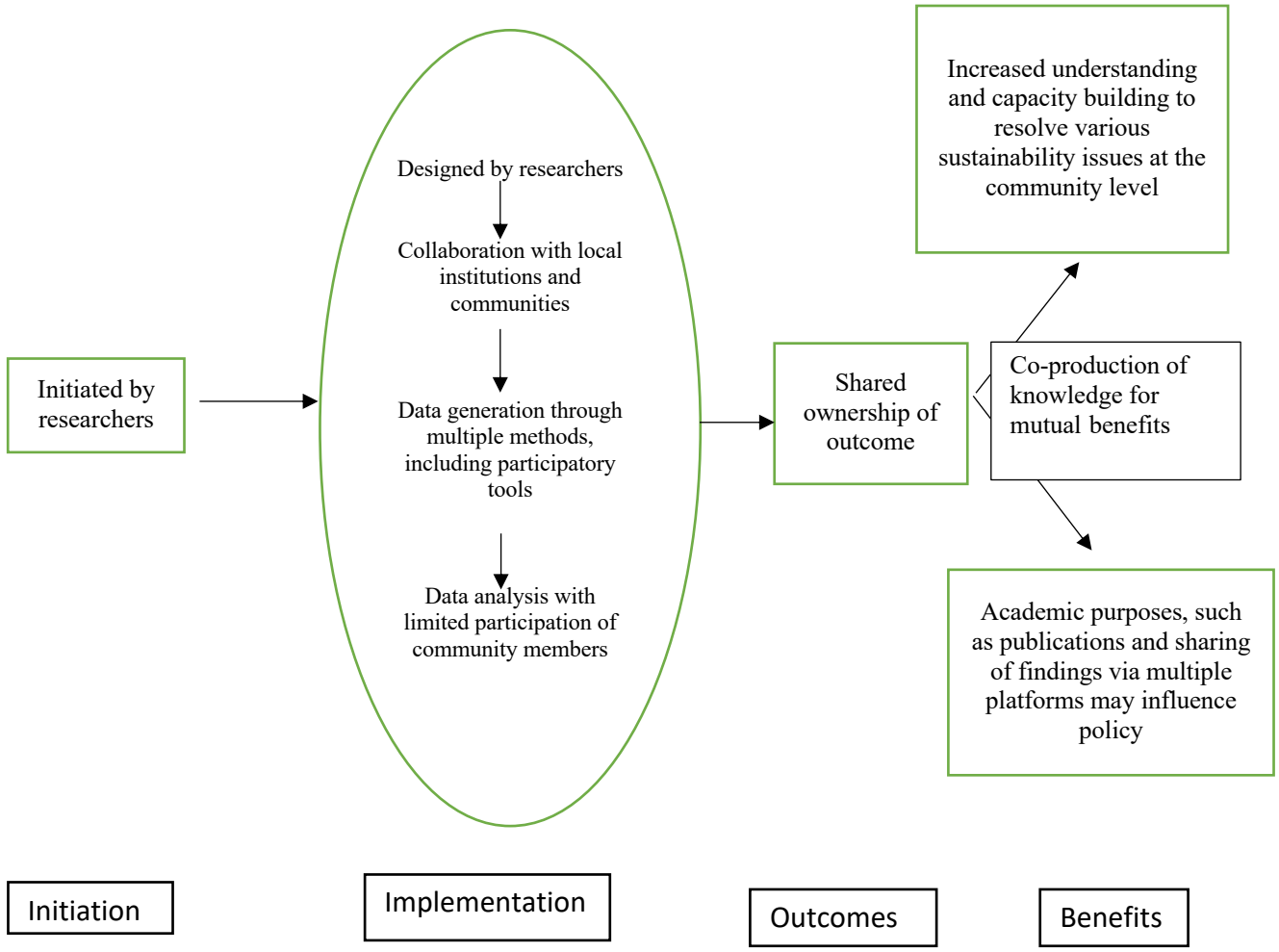
My research design thus employed attributes of participatory research. I used the existing literature to conceptualise the next generation CBEA frame; however, the frame was developed in collaboration with academics and practitioners, as well as incorporating input from local experts and my observations from participating in public consultation and participation process in two different EIAs in Kenya (separate from my own case studies). I collaborated with local institutions and communities in Kenya to co-produce knowledge for mutual gain through undertaking two CBEAs at the two case study sites and analysing their outcomes. In addition to co-creating knowledge, this research was designed to address the needs of the local communities. These CBEAs, however, were different from conventional EIAs, yet were designed to meet the specific requirements of the Kenyan legislation. Unlike the EIA legislation in Kenya where public consultation and participation is a separate stage, communities in these CBEAs were involved from the beginning and participated throughout the assessment process. Community members used this platform to share their views and learn from each other, which contributed to their capacity building. Community members then used their learning to make important

decisions during the CBEAs that were suited to their local context and aimed at the betterment of their environment.

This research was not entirely participatory, as a fully participatory approach would require equal participation of local communities in each stage, which was not possible for the early planning and proposal stages of my research. Also, truly participatory research requires a considerable amount of time and resources [Cornwall & Jewkes, 1995], and as a student researcher I had limited access to both. Therefore, due to the origin of this research within the academic environment, the varying degree of involvement and participation of locals in different stages of the research, and the co-production of outcomes, I termed this approach Researcher-driven Participatory Research (RPR).

Figure 3.1 outlines this research process (RPR), which was initiated by the researcher and followed by four activities that were conducted in a collaborative environment, from the design through the analysis of the research. I collaborated with academics, practitioners, local institutions, local experts, and community members in conducting these research activities. Throughout the research process the degree of local participation varied from data generation to the co-production of jointly owned knowledge, as showed in figure 3.1. The research process was designed to facilitate social learning. The collaborative research environment and continuous engagement of various actors in the data generation process created a platform where deliberations, discussions, and decision making took place in a participatory way to co-produce knowledge, which reflects conditions necessary for both social learning processes and outcomes. The co-production of knowledge that resulted from the research was meant to satisfy both the needs of the communities and my academic requirements. The foundation of the RPR was participation, social learning, and mutual benefits, as noted in the figure below.

Figure 3.1 Researcher-driven participatory research (RPR)



3.4. Research approach and Strategy

My research employed a qualitative approach. Winchester and Rofe [2010] describe qualitative research as useful for exploring human environments and human experiences within a diverse context. My research explored the dynamics between humans and the environment to address local sustainability issues through next generation CBEAs in Kenya, and hence qualitative research was appropriate. Further, the flexibility of qualitative research allowed me to investigate these dynamics within their natural setting through direct interaction with participants, where participants were free to express their opinions [Creswell, 2014]. This approach was useful in exploring and understanding various socio-ecological problems within social reality [Creswell, 2009]. Moreover, this approach contributed to my understanding of the complexity of local issues from multiple dimensions through the generation of subjective data,

while the flexibility within this approach allowed me to revisit my instruments and make any necessary modifications [Creswell, 2014].

I used a case study strategy of inquiry, which was also compatible with the participatory paradigm and qualitative approach. A case study helps in investigating a contemporary phenomenon within its real-life context where the boundaries between the phenomena and context are ambiguous (Yin, 2003). Case studies can be used to develop an in-depth understanding of either a single case or to explore a case-specific problem by examining a real-life case that eventually aims to produce context-specific knowledge [Flyvbjerg, 2006]. This flexible research strategy allowed me to design two CBEAs and examine their potentials in two different places [Creswell, 2013, 2014]. In case study research, the unit of analysis can focus on studying an event or a program or an activity in an in-depth fashion to develop a rich understanding. This strategy also embraces multiple forms of data collection that may include, for example, interviewing, observations, and document review. [Creswell, 2013, 2014]. I identified two cases in Kenya to develop an in-depth understanding of the next generation CBEA process. As described by Creswell [2013], researchers often derive conclusions from case studies with meaning or explanation, my research also aimed to explore the efficiency of next generation CBEA and identify the best practices from the experience.

Case selection and characterisation

My research examined the potential of next generation CBEA in a real-life context. In order to achieve my research purpose and objectives, it was important for me to understand the local context and cautiously choose case studies. The case study site selection included a preliminary exploration visit to Kenya, and the second phase of my fieldwork during which I finalised two sites. The selection criteria for my case study sites were based on the following criteria:

1. Proposed small-scale community-based projects that were less complex than high risk projects but required an EIA as per Kenyan legislation;
2. The desire of the communities to move forward with obtaining the necessary approvals to proceed with the project;
3. The proponent (based within the community) must have the budget to hire a licensed EIA expert to carry out the assessment; and

4. The willingness of the communities and the EIA experts to participate in the CBEAs and to cooperate in my research.

My research was open to various potential cases such as sand dams, conservation agriculture, community-based ecotourism, community-based forestry, etc. I explored a number of potential case study options before finalising the two case studies where I facilitated the next generation CBEAs.

Table 3.1 presents all the potential case study options I considered, and each option is scored based on the four selection criteria and logistics. I used one point for each criterion including logistics. On the scale 5 on 5 was considered as the perfect match where all the five criteria were met. The water pan project in Kilifi county was perfect for consideration; however, I could not pursue it further for security reasons, as per, the Canadian travel Advice & Advisories, the site was considered unsafe territory. Similarly, the water supply project in Nyeri was not suitable due to access and timeline issues. The sand dam project in Kitui came to my attention after I finalised the Murang'a project, and hence I did not do further follow-up with the case.

Table 3.1 Potential case study options

Project Type	Location	Project contact	Score (based on selection criteria)	Decision
Water pan	Kilifi County	Anglican Development Service - Pwani (NGO), Malindi, Kilifi	04/05	Not pursued (Security reasons)
Water supply (Pipeline connection for irrigation)	Nyeri County	Elizabeth Wachira, EA Consultant, Nairobi	03/05	Not pursued (timeline issue/logistic issue and needed to work with county EIA expert)
Sand dam	Kitui County	Dr. Frida Mutui	-	Not pursued (as said yes to Murang'a)
Water tank & supply (Small-scale irrigation)	Murang'a County	GAKAKI Small-scale irrigation water project, Murang'a	05/05	CBEA was conducted

Water intake (Water irrigation)	Kirinyaga County	MIUKA water project, Kirinyaga	05/05	CBEA was conducted

The two water irrigation projects in Murang'a and Kirinyaga best fit my selection criteria, and logistics. I came in contact with both the GAKAKI and MIUKA projects through contacts suggested by NEMA. Once the four major criteria for case study selection were met, I made a few visits to the case study sites facilitated by the NEMA-suggested contacts and my interaction with the respective proponents were crucial for my decision to finalise selection of these two projects. I was able to work on logistics, such as accommodations, local transit and food during these visits. I integrated learning from the first case study into the CBEA at the second site. Detail of the case study projects are described in Chapter 5.

Since I wanted to carry out a live case, my initial strategy was to limit myself to one case study. After consideration of the number of the cases that I could potentially become a part of that fit well with the focus of my work, I decided to undertake two case studies. My thinking, and that of my committee, is that this would allow for some level comparison across the two cases and also provide back-up if one of the cases fell through for some reasons, or did not work out in terms of my engagement as hoped. While two cases were a lot to take on, the experience was enriching as described in the thesis.

3.5 Data collection

Two active CBEAs were part of my research, and as such played a major role in the data collected about the components of the next generation CBEA frame. As described below, I relied primarily on participatory methods to generate data for my research. Although the primary data were generated largely during the CBEA phase, the pre-CBEA phase was crucial for the preparation for the CBEA phase as well as for social learning.

3.5.1 Data collection plan and tools

The data collection tools and research activities I used were organised around my five research objectives. I had two main phases of data collection as outlined below. In the first phase, which addressed the first two objectives of my research, I worked to understand the current status of CBEA in sub-Saharan Africa and developed a conceptual frame for next generation CBEA. The practical aspects of the CBEA frame, with detailed tools and implementation techniques, was developed with input from some key informant interviews as

well as after my participation in two live EIAs in Kenya where I was just an observer to understand the public consultation and participation process. The next generation CBEA frame is described in Chapter 4.

The second phase of my research involved the application of the developed frame in two case studies to examine the potential of the key components of the next generation CBEA frame. For each case study, a research assistant from the local area who had knowledge of local culture and language was hired to assist in data collection. I explicitly discussed with them the purpose and objectives of my research and their roles and responsibilities, before proceeding to the data collection stage. As participant observation was integral to my research, I trained the research assistants on what and how to observe, including via a few practice observation sessions. During the CBEA phase, when I was busy with facilitation, I asked the assistants to observe the public participation process and make some notes as part of the data collection procedure. I verified the observation notes with them and whether my observations rightly captured and interpreted the data. In addition to translating interviews and conversations in the field, the assistants helped me with understanding the local culture and dynamics within the communities.

3.5.1.1 Phase 1

Phase 1 of my research included preparation for developing the next generation CBEA frame in Canada and a pre-field trip to Kenya. During the first phase, I developed an understanding of current CBEA practices in Africa, with a focus on Kenya, to address the first two objectives of my research. This included reviewing relevant academic and non-academic literature and conducting interviews with experts in this field of study and practice.

Review of literature

In order to understand the existing community-based approaches to EIA in Africa and elsewhere in the world, I did a systematic review of peer-reviewed and gray literature [Bowen, 2009]. I reviewed relevant government documents such as the existing EIA legislation and associated policy in Kenya, especially the *Environmental Management and Coordination (Amendment)* Act, 2015, as well as some published reports on CBEA (both in Africa and elsewhere). Among the benefits of the literature review, as described by Bowen [2009], it broadened my understanding and enhanced my empirical knowledge of CBEA. Key literature I reviewed was on sustainability assessment, deliberative decision making, follow-up and monitoring, and learning.

Key informant interviews

Interviews are useful to collect information on an array of topics, including society, culture, political systems, and local beliefs and practices [Dunn, 2010; Tremblay, 1957]. As described by Marshall [1996], key informants are expert sources of information with profound insight. I prepared a list of people whom I wanted to interview from the literature I reviewed as well as names suggested by my committee members. Once I had the list of people I wanted to interview, I made the necessary arrangements for the interviews, most of which were conducted through Skype.

Table 3.2 outlines some basic information about 16 key informant interviews I conducted with experts in environmental assessment from Australia, Canada and Europe, as well as working in the natural resource management sector in Kenya. These interviews were done to understand not only existing EIA practices but also potential approaches or practices to integrate into the next generation CBEA frame, e.g., deliberative approaches, follow-up and monitoring. I interviewed two local EIA experts who had years of experience in conducting EIAs in Kenya during the second phase of my fieldwork before designing my CBEA frame. I also sought feedback, especially from the local EIA experts, on various tools and techniques that were potentially useful in conducting next generation CBEA. I interviewed experts to understand their views on the four selected next generation CBEA components (see columns 2 and 3 in Table 3.2) and how they would integrate these components if they were conducting an assessment.

Table 3.2 List of Key informants

Participant	Organisation type	Relationship to EIA
A1	University	Academic
A2	University	Academic
A3	University	Academic
C1	University	Student researcher
C2	University	Student researcher
C3	Private consultancy	EIA consultant
C4	University	Academic
C5	Private consultancy	EIA consultant
C6	University	Academic
C7	Private consultancy	EIA consultant

C8	Private consultancy	Environmental lawyer
C9	University	Academic
E1	University	Academic
E2	University	Academic
K1	Government	EIA regulator
K2	Private consultancy	Licensed EIA expert
K3	Private consultancy	Licensed EIA expert
K4	Private consultancy	Licensed EIA expert

I used a semi-structured interview schedule to guide the interviews (Appendix A). My interview guide included mostly open-ended questions, designed to be neutral, unambiguous, and understandable [Dunn, 2010; Gill et al., 2008]. Each interview lasted approximately one hour. With permission, I used a voice recorder and made some personal notes. With the data collected through these interviews and the literature review, I further developed my understanding of CBEA and the next generation components.

3.5.1.2 Phase 2

Phase 2 of my research focused on testing the potential of the next generation CBEA frame. I began phase 2 of my fieldwork by making new connections and meeting people for potential case studies. Prior to the beginning of my fieldwork, I contacted the licensed EIA experts for the respective case study sites recommended by NEMA. As mentioned earlier, only licensed EIA experts are allowed to conduct EIAs in Kenya. I explained the architecture and steps of the next generation CBEA frame, and clarified the role and responsibilities of each of us before the beginning of the CBEAs.

Since the next generation CBEAs were beyond what was required by the Kenya legislation, it was more than what the EIA experts were expected to be paid for. For example, the pre-CBEA phase, which focussed mainly on the capacity-building of participants and aspects of the social learning process, required only limited participation from these experts. Hence, I agreed to facilitate most of the CBEA processes with limited presence and supervision of the respective experts. Consent forms were signed and collected once the EIA experts agreed to the terms and conditions and confirmed their participation in the next generation CBEAs. Phase 2 of

my research had three different stages that were required to address the remaining three research objectives.

1. Pre-CBEA phase

The pre-CBEA phase was important to understand the local context at both sites and set the groundwork for the CBEAs. I used the following methods during this phase.

Rapport building

Rapport building with communities is the first step in community-based participatory research (Le Dantec & Fox, 2015). I spent 10 days (out of 8 weeks) in the community at the first case study site (i.e. GAKAKI project, Murang'a) and 14 days (out of 6 weeks) in the community at the second case study site (i.e. MIUKA Project, Kirinyaga) preparing the ground for the implementation of the CBEAs. As recommended by Arcidiacono et al. [2017], my staying within the community contributed to frequent interaction with locals, familiarising myself with the context, and establishing a trustworthy and respectful relationship with community members.

Power (and gender) profile

A power profile helps understand the power dynamics pertinent to decision making and the elements that influence social justice and fairness within a particular community [Arcidiacono et al., 2017]. Arcidiacono and her colleagues [2017] describe power profile as the data gathered to describe how local context including locations has an influence on the decision-making process and to the analysis of factors explaining justice and fairness within that particular context. I used a power profile to explore and understand the power dynamics within the communities at both sites, and whether and how certain people could influence the decision-making process. As power is a very sensitive issue, I gathered information carefully through participant observation during the pre-CBEA activities. I had informal interactions (avoiding direct questions on power dynamics) with the community members to get a sense of power and gender dynamics within the communities at both sites. Carrying this out helped me understand who the opinion leaders were and any marginalised groups that I should ensure were given voice more in the CBEAs. I also had input from the two research assistants. As we walked around the communities, the research assistants shared their perspectives on local customs and traditions and information on gender dynamics within the communities.

Participatory workshops

Workshops are described as well suited to sharing and integrating knowledge, which not only facilitates social learning but also contributes to trust-building and increases the understanding of participants [Knapp et al., 2011; Patel et al., 2007; Huntington et al., 2002]. Therefore, the pre-CBEA phase encompassed a series of participatory workshops that included various stakeholders, i.e. the proponents, community members, the EIA experts (first case study site only), and the research team, where participants were introduced to the concepts of environmental assessment and sustainability and brainstormed various issues pertinent to their local context. These workshops helped contextualise issues at a deeper level and build participants' capacity through interactions and sharing of knowledge. These workshops are described in detail in Chapter 5.

2. CBEA phase

The CBEA phase was where the next generation CBEA frame, which I developed during phase 1 of my research, was tested. It is important to note that the detail of this stage continued to evolve as I learned more about the case study communities and aspects of next generation CBEA during phase 1 of the research as well as from my experience with the first case study. As mentioned in the Chapter 1, I largely conducted the CBEAs by myself with the help of some inputs from the EIA experts (especially at the first case study site) and continuous guidance from my committee members, especially Dr. Spaling who was in Kenya at that time. In both cases, I had the freedom and flexibility to test this frame while also having the pressure to finish the CBEAs within a stipulated timeline and resources. Due to my role as the main facilitator, I had limited time for writing notes during the workshops. The work of the research assistants at both sites helped me facilitate the process smoothly while they not only assisted me in translation but also made important observation notes.

Participatory rural appraisal (PRA)

Drawing on examples from the community-based assessment literature [Kilemo et al., 2014; Walker et al., 2014; Spaling et al., 2011; Sims & Deb, 2009; Spaling, 2003], I used some of the tools from the participatory rural appraisal (PRA) toolkit to implement the CBEA frame. PRA is an approach that helps "enable local people to share, enhance, and analyse their knowledge of life and conditions to plan and to act" [Chambers, 1994, p. 953]. The PRA tools that I used for the CBEAs were: transect walks with participants to the project sites while

observing the surroundings, asking questions, and listening to the participants; participatory mapping to assess the social networks of participants[4], group discussions; and workshops [Binns et al., 1997]. These PRA tools helped to understand the current status of the ecosystem as a whole. The knowledge and understanding gained from this contributed to the subsequent scenario analysis while conducting workshops.

Participatory workshops

The CBEA phase also included participatory workshops, which covered various steps of the assessment process. In keeping with the tenets of meaningful public participation, I used multiple participatory community workshops as a transparent process that provided enough space to brainstorm and ascertain potential solutions to common complex problems [Huntinton et al., 2002]. The CBEA participants formed various small groups of six to eight people for the smooth functioning of the workshops. There were mixed groups as well as groups comprised of youth, and adults (both women and men). Each group had a leader, chosen by the group members, to facilitate discussions and in many cases to present their opinions to the large group. It was also the responsibility of group leaders to organise their group members during each workshop, and they were the medium of communication between the facilitator and their group members. All the workshops were a collaborative effort between the various stakeholders (see Table 3.3). Table 3.3 summarises the workshops at both case study sites that were held during the CBEA phase, where the proponent and community members participated. During the workshops, participants had the opportunity to discuss and deliberate various issues and ask questions for clarification. Each group presented their views and decisions were made after the final discourse. The final decisions made during the workshops were largely consensual, which was appreciated and accepted by the participants present at each workshop.

[4] Only for GAKAKI Project in Murang'a.

Table 3.3 Summary of CBEA workshops at both case study sites

Case study sites	No of workshops	Average no of participants	Duration (in hours)	Stakeholders
GAKAKI Project, Murang'a	4	30 - 35	3	GAKAKI Management committee, EIA expert (limited presence), community members, and research team[5].
MIUKA Project, Kirinyaga	3	50 - 55	3	MIUKA management committee, EIA expert (limited presence), community members, and research team.

The steps of the CBEAs were largely adopted from Spaling [2003], as well as from the material received through personal communication with Spaling (Table 3.4). The first column in Table 3.4 identifies the CBEA steps and the activities to implement these are described in column 2. Column 3 highlights the key next generation components that were part of the EIA steps. Finally, column 4 elaborates the activities (column 2) conducted for each EIA steps. Details of the CBEA frame are discussed in Chapter 4; Chapter 5 provides a detailed description of the implementation of the CBEAs at both case study sites.

Table 3.4 CBEA steps and activities

EIA steps	Activities carried out	Key components of Next generation CBEA	Description
Screening[6]	Identification of the most valued ecosystem components	Public Participation Consideration of sustainability [See	Participants were divided into various groups to identify their most valued

[5] Research team comprised of Researcher (me) and the researcher assistants at two case study sites

[6] I conducted the screening in collaboration with the local EIA expert only for the GAKAKI project (Murang'a). For the MIUKA project (Kirinyaga), it was already carried out by the EIA expert prior to my involvement.

EIA steps	Activities carried out	Key components of Next generation CBEA	Description
	Justification of the proposed project & consideration of project alternatives Information on EIA Discussion of the local environment	Pope & Petrova, 2017] Learning	components from the environmental, social, and economic categories. The Chairman of the management committee explained the project details in the local language (Kikuyu). Everything else was interpreted in Kikuyu followed by a Q & A session where participants had the opportunity to ask questions and seek clarification.
Scoping – Impact Assessment	Transect walk to the field site[7] Participatory mapping Discussion of the proposed project [8] Information on EIA[9] Project Alternatives[10] Assessment exercise	Sustainability Public participation Learning	Exploration of the proposed project site Participants in groups did the impact assessment exercise. Interpretation and Q & A were available.

[7] Only for the case study site 1.
[8] Only for the case study site 2.
[9] Only for the case study site 2.
[10] Only for the case study site 2.

EIA steps	Activities carried out	Key components of Next generation CBEA	Description
Scoping – Mitigation measures	Identification of mitigation measures Filling out the questionnaire as part of the data collection procedure required by NEMA.	Sustainability Public participation Learning	Participants were asked to think about the potential solutions to already identified negative impacts. Interpretation and explanation were available. Questionnaires were given to individuals who were consistent participants throughout the CBEA[11]. Explanation of how to fill out forms was provided in advance, and help was available to explain the questions in case of any difficulty.
The Environmental Management Plan	Planning for the proposed project during and post construction	Sustainability Public participation Follow-up & monitoring Learning	Participants and the project management committees at both case study sites, were engaged in mapping out the plan. Sharing of responsibilities including duties

[11] In the 1st case study site, some assistance were provided to people who could not write in English.

EIA steps	Activities carried out	Key components of Next generation CBEA	Description
			and costs, was discussed.

Scenario analysis

In order to conduct a participatory, next generation CBEA within the community, I used scenario analysis as part of the workshops, which was useful for assessing future environmental problems [Patel et al., 2007]. Scenario analysis was a participatory exercise where community members brainstormed to identify potential problems through visualisation and the creation of hypothetical scenarios, and then integrated the insights gained through the exercise into decision making [van Asselt Marjolein & Rijkens-Klomp, 2002, p. 170]. For example, to bring in the sustainability component I asked the participants in the CBEA workshop what was their vision for the future and what were their expectations from the project. Notes were taken during all the CBEA activities as audio recording was not feasible with such large groups at both sites.

Follow-up meetings

During the CBEA phase, I held various follow-up meetings. At the first case study site, I re-visited various workshop groups where group members were gathered in one place. The time and location of the meetings were fixed according to the availability of the members. Each follow-up meeting lasted about an hour where we revisited the major outcomes of the CBEA workshops. These follow-up meetings were not part of the required EIA, but were part of my next generation CBEAs. These follow-up meetings were very accommodating, and participants were free to ask questions and refresh their memories. For the second case study site, we had only one follow-up meeting. Participants appreciated the follow-up meetings and acknowledged their benefits.

Participant observation

I used participant observation throughout my fieldwork to develop my understanding of the social setting, especially the complex social relationships within the communities at both sites. During the CBEA phase, participant observation helped to understand the potential of the CBEA process. Bogdan [1973] describes participant observation as a research approach where a researcher spends a prolonged time with subjects in their natural setting, where the researcher participates in their everyday life.

My role was as observer and participant, where other participants were aware of my observation and my participation was secondary to my role as an observer [Creswell, 2009; Davis, 1986]. I followed an observation schedule (Appendix F) and had informal interactions with participants during the implementation of the CBEAs [Alexander, 1982]. Initially, I intended to take field notes; however, due to the demanding facilitator role, the research assistants from both sites took notes to supplement my data. Maintaining a log while in the field, which is one of the four types of field notes described by Bernard [2006], helped me in doing my fieldwork in a systematic and organised way. I planned my schedule and activities in the log to use my time efficiently during the CBEAs. My field notes consisted of my observations, interpretations of my observations, and self-reflections that included my reactions to different field situations. The results were methodological field notes (challenges faced during the implementation of the CBEAs) and descriptive field notes (description of my observations related to my research purpose and objectives) [Bernard, 2006]. I also wrote a diary describing my personal experience and reflections on what I observed and experienced in the field over the course of my research. During my time in the field I continuously interacted with the participants to understand their issues and their views on the ongoing CBEA activities. It was challenging for me to manage the facilitation given the very limited presence of the EIA experts.

3. Post-CBEA phase

The post-CBEA phase was very important for my research, as a large part of the data collection was done during this time. During this phase, I reviewed the CBEA process with participants, including tools and instruments used in the field, and explored aspects of learning. I used two techniques in sequence, (group) dialogues followed by semi-structured interviews, to address the last two objectives of my research, i.e. to find out the barriers and enablers and to explore social learning in relation to the next generation CBEAs.

Dialogue

Ledwith and Springett [2010] describe that dialogue is a flexible process taking place in an informal setting where the open sharing of information can take place. Despite the challenges that may be faced, such as fear, displays of power, mistrust, or poor communication, dialogue focuses on enabling open communication, true speaking, and listening, and also makes people responsible for their ideas and learning [Ledwith & Springett, 2010]. As such, I used ‘dialogue’ to indicate respectful communication and deliberation in my research, following Ledwith and

Springett's [2010] description that "Dialogue is more than a conversation; it is at its best an interactive process of learning together whereby mutual value is enhanced through the process of meaning-making" [p.128]. A dialogical process is about transformation and change, as it is about listening as much as about talking, and dissent is equally important as consensus. The outcome of such a dialogical process is an increase in understanding and acceptance of differences, and, in ideal conditions, the process may lead to social action. It is all about mutual meaning-making, and the free-flowing of dialogue may lead to social learning [Ledwith & Springett, 2010], which was an important aspect of my research.

I used dialogues as a way to allow participants who were part of the CBEA process from the beginning and attended most CBEA workshops to reflect on the overall CBEA activities. In the dialogue, participants reflected upon the CBEA process, what they had learned from their experience, and whether their learning had resulted in any joint actions, changes in everyday practices, or had informed conversations or brainstorming with other community members.

With the help of my research assistants in interpretation and explanation in the local language, I facilitated the dialogues with small groups of four to six participants, an ideal size for dialogical process [Ledwith & Springett, 2010], using focus questions related to objectives 4 and 5 (Appendix B). The group dialogical sessions with the participants helped the community members to reflect on the CBEA process and refreshed their memories, while also serving the purpose of data collection for the last two objectives. I held a total of eight group dialogues (five in Murang'a and three in Kirinyaga) with the participants who were present in most CBEA workshops.

Semi-structured interviews

Semi-structured interviews are a flexible tool to apprehend people's perspectives and the ways they interpret their experiences [Rabionet, 2011], and allow researchers to explore different responses effectively [Creswell, 2013]. Semi-structured interviews use interview schedules [Dunn, 2010] that consist of open-ended, general and content-oriented questions that contribute to developing an understanding of key research themes [Creswell, 2013].

Following the dialogue sessions, I conducted semi-structured interviews with participants to capture their perspectives on the CBEA process and any individual or collective actions or plans for action that might have resulted (i.e. learning outcomes). I used an interview schedule (Appendix C) to interview 35 people (23 individuals from Murang'a, including the EIA expert,

and 12 individuals from Kirinyaga). The interview participants were chosen purposefully from the group of people who were part of the CBEA process to represent adequate diversity, such as gender, age, and socioeconomic status. I obtained participants' voluntary consent and permission to record their voices and take notes prior to the interviews. Each interview lasted an average of 75 minutes.

3.5.2 Summary of research methods

Table 3.5 below summaries the research methods I used in order to achieve my research objectives. The first column in the table shows the five research objectives, the second column informs the specific methods I used to achieve the objectives, and the third column shows the deliverables.

Table 3.5 Summary of objectives & corresponding data collection tools with deliverables

Research Objectives	Data collection methods	Deliverables
1. To critically analyse the current African CBEA practices to understand recent developments.	Document and literature review	Various gaps and strengths in the literature were identified to understand the existing situation of community-based resource management and assessment in Africa.
2. To develop a framework for next generation CBEA.	Document and literature review, and key informant interviews.	A proposed next generation CBEA frame (see Chapter 4).
3. To examine the potential of the next generation CBEA framework.	Participant observation, field notes, informal interaction with participants, and discussion with the research assistants.	Observations on the CBEA process and activities, including participants' engagement, were made and notes were taken.
4. To identify and document various barriers and enablers that may enable or inhibit the implementation of specific next generation CBEA activities.	Group dialogues, semi-structured interviews, and participant observation.	Best practices for, as well as the barriers to CBEA, were identified and documented. Chapter 6 provides discussion of the various barriers and opportunities identified during the CBEA.
5. To examine and explain the relationship between next generation CBEA and social learning, and to identify the transformative aspects of social learning that emerged and may be possible.	Group dialogue, semi-structured interviews, and participant observation.	An explanation of the interrelationship between next generation CBEA and social learning is provided in chapter 7. Learning outcomes for sustainability were identified and documented.

3.6 Research ethics

My research engaged with people who voluntarily agreed to participate, and their identities were kept confidential. Therefore, following appropriate human ethics guidelines was an important aspect of my research. Ethics approval for my research, following the Canadian Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans, was obtained from the Joint Faculty Research Ethics Board at the University of Manitoba in Canada prior to the commencement of the fieldwork. My research also obtained fieldwork approval from the Catholic University of Eastern Africa (Appendix G) in Nairobi as well as ethics clearance from the Kenyan National Commission for Science, Technology and Innovation (NACOSTI) (Appendix H). As per the ethics protocol, I also made confidentiality agreements with the research assistants at both sites.

3.7 Data analysis

Data analysis was a continuous process during my research to identify patterns, trends, and relevant linkages in the data (Creswell, 2014). The analysis had two phases. The first phase of analysis was done to build the conceptual frame for next generation CBEA through an extensive literature review supplemented by information from the key informant interviews. The review of relevant literature helped me understand the various concepts and the current state of CBEA in the world, including Africa. The first 14 interviews were transcribed and analysed. After combining the information from both of these sources and establishing linkages, which required a lot of brainstorming and analysis, I designed the conceptual frame for next generation CBEA. My committee members, especially Drs. Sinclair and Spaling provided critical input. Upon my second visit to Kenya, I attended two ongoing EIAs, especially the public participation/consultation stage, and made some observation notes. I also discussed my experience of public participation in those two EIAs with my local supervisor. Following this I conducted two more key informant interviews – one with a NEMA staff member and another one with an independent EIA expert. I incorporated my initial Kenyan experiences into the conceptual frame to accommodate the local context. This first part of the analysis contributed to the design of the next generation CBEA frame.

The second phase of my analysis continued while I was conducting the next generation CBEAs in the field. A preliminary analysis of a few interviews and dialogue transcripts was done and a few initial linkages were identified at both case study sites. The preliminary findings were

validated through member checking (see below) [Creswell & Miller, 2000]. As Creswell [2013] notes, issue-related meanings often emerge out of case study analysis, and analysis of case study data helps establish patterns and linkages among multiple categories. All the data generated during this stage was transcribed. I used NVivo Computer Assisted Qualitative Analysis Software (2018) to assist with my analysis. Data, once entered into NVivo, were coded starting with parent themes drawn from my conceptual framework for next generation CBEA, i.e. sustainability, deliberative approach (meaningful participation), follow-up and monitoring, and learning.

In order to analyse these themes, I explored their subthemes drawn from the literature and key informant interviews, for example: i. for sustainability, I considered subthemes of environmental impacts (e.g., on water), social impacts (e.g., consideration of health), and economic impacts (e.g., consideration of income); ii. for deliberative approaches, I looked for evidence of arguments and questioning each other during decision making in the CBEA process using criteria of meaningful participation in EIA described by Sinclair and Diduck [2016]; and iii. for social learning, I considered cognitive learning (knowledge acquisition, increased understanding, etc.) and other aspects of social learning outcomes. I also looked for themes and subthemes that emerged from the data analysis and were relevant to the various objectives of my research. Data analysis included coding, thematic sorting, and identifying relationships among the various themes [Forman et al., 2008].

3.8 Limitations and quality of research

As this research followed a qualitative approach and used a case study strategy, the research lacks statistical-probabilistic generalisability. Unlike post-positivist, quantitative research based on different ontological and epistemological assumptions, this research did not aim for generalisability, rather it offers unique, rich knowledge from its purposeful and purposive sampling, which is a unique strength of qualitative research [Smith, 2018]. Through this research I had the opportunity to examine the advanced frame of CBEA in action, which provided insight into the use of its various components.

Credibility and dependability are important considerations in qualitative research, especially research seeking to understand phenomena in a real-life setting [Golafshani, 2003]. Qualitative researchers stress the importance of quality and trustworthiness to address credibility and dependability [Noble & Smith, 2015; Golafshani, 2003]. In qualitative research, where

multiple realities exist that are socially constructed, it is important to present participants' perspectives precisely and accurately to address credibility. After spending some time in the communities, having frequent interactions with community members, and listening to the interviews multiple times, I gained a better understanding of their perspectives. Also, towards the end of my fieldwork, I was able to identify a few major themes or patterns from my initial analysis, which I shared with the community members to receive their feedback and ensure my analysis reflected their perspectives and understandings.

In qualitative research, one needs to verify the research steps through examination of raw data and various aspects of data collection process in order to attain data consistency or dependability [Golafshani, 2003]. I used multiple data generation methods and techniques such as document analysis, key informant interviews, participant observation, semi-structured interviews, and dialogues, as a form of triangulation to ensure credibility and dependability. The use of both primary and secondary sources of data and the verification of initial findings with research participants reinforced the credibility and dependability of my research. My preliminary findings were validated through member checking [Creswell & Miller, 2000]. My discussions with the research assistants at both sites, who were from the respective case study communities, further contributed to my understanding. Finally, prior to my departure I shared a summary of the preliminary research findings at both sites, which contributed to the validation of my initial analysis. Creswell and Miller [2000] explain various ways to establish credibility and validity in qualitative research, and from the methods they describe I used triangulation, member checking, and collaboration with research participants.

The contribution of multiple resources at the University of Manitoba's Natural Resources Institute helped me gaining clarity on the research methods, which not only validated the methods I used but also instilled confidence within me. Critical input from my faculty advisor Dr. Sinclair and committee members Dr. Spaling and Dr. Mignone guided me in selecting appropriate methods and tools for my research. My peers and various faculty members with expertise in research methods also helped me in troubleshooting some of the methodological problems I encountered.

Chapter 4
The architecture of next generation community-based environmental assessment

"It is important to specify the sustainability criteria … and to understand the local context as well as the local aspirations and possibilities" (Gibson, 2018).

4.1 Introduction

In Chapter 4, I develop the next generation CBEA architecture based on the literature review, the key informants I interviewed during the research, and my experience with public consultation/participation meetings in Kenya. This chapter also discusses the practicality of various concepts and ideas pertinent to next generation CBEA in conjunction with the prescribed environmental assessment legislation of Kenya.

Chapter 4 navigates through the design of the next generation CBEA architecture and frame based on the four major components, including sustainability, public participation, follow-up and monitoring, and learning. The chapter ends with the presentation of the next generation CBEA frame, which was a guidebook for implementing the advanced form of CBEA.

4.2 Environmental impact assessment in Kenya in practice

In Chapter 1, I briefly introduced EIA in the Kenyan context. In this section, I share a summary of my analysis of the key informant interviews and the EIA guidelines from the Kenyan EMCA, 1999, to provide a better understanding of the EIA process. The environmental law in Kenya is quite cogent and advanced with clear guidelines, and EIA is legally mandated for any sort of development work in Kenya. Key informant K1 explained that if anyone is unsure about the legal EIA requirements for a particular project, they can approach NEMA for further guidance (NEMA does not charge any consultation fee for EIA).

Like every other conventional EIA, key informants K1 and K2 explained that screening is the first step in the Kenyan process where NEMA decides whether or not a project requires a full EIA study. The Kenyan environmental legislation categorises risks as low, medium, and high. Depending on the evaluation of the risk the project poses, NEMA decides whether or not a particular project requires a complete EIA study. Informant K2 clarified that a project report for a regular EIA applies to low or medium risk projects. Many small-scale, community-based development projects, according to informants K1 and K2, do not require a full EIA study, which is conducted mostly for complex and large-scale projects where the risk is relatively high.

Informant K1 further explained that a housing project within a designated residential area with existing infrastructure, such as electricity and sewage lines, and which is not within any ecologically sensitive zone, may get an exemption from a full EIA study from NEMA at the screening stage, provided a good project report is submitted to NEMA by the proponent or developer that satisfies all the required criteria.

According to the EMCA, the screening exercise usually includes a project and site description, collection of baseline data, data analysis, evaluation of environmental impacts, evaluation of project alternatives, consultation and public participation, preparation of a project report, review, and the approval process. Proponents are expected to submit a project report to NEMA for the screening of their projects. The EIA guidelines and administrative procedures explicitly indicate that a project report must include information on the project proponent, including name, address, contact number, etc.; the title of the project; purpose and objectives; nature of the project; project location; types of project activities to be undertaken during the various stages of the project; project design; materials to be used and their management and disposal; potential environmental impacts; mitigation measures; a prevention plan to prevent any accidents during the project cycle; health and safety measures of the workers as well as neighbouring communities; economic and social benefits of the project; budget; public views, especially the perspectives of the potentially affected communities; and an environmental management plan [EMCA, 1999]. As proponents are expected to predict potential project impacts and indicate mitigation measures they will use, informant K1 noted that engaging a licensed EIA expert helps to ensure a maximally positive outcome.

Public consultation, as per the EIA guidelines, is a requirement in preparing a project report. Although there is no specific format for public consultation to be followed, informant K1 confirmed that proponents must provide evidence of public consultation. For low or medium risk projects, as informant K2 explained, EIA experts generally administer the entire process and distribute a minimum of 10 questionnaires to collect the opinions of people living close to the project site. Informant K2 further added that it is relatively easy to get information through public consultations for smaller and low-risk projects where participants can freely share their concerns with a potential increase in traffic, noise, air pollution, etc.

The review process largely depends on the type of project. Once NEMA receives an EIA report with all the necessary copies and associated documents, it sends out relevant documents to

other departments for review (e.g., Water Resource Authority or Agriculture). According to informant K1, NEMA communicates with the relevant departments, gets their comments, reviews those comments, and based on that review, makes a decision either to approve, reject, or approve with certain conditions. NEMA also makes random visits to project sites to verify whether public participation is being conducted or not. Informant K4 explained that in the case of community-based, low-risk projects related to irrigation, there are multiple agencies involved and hence, proponents must directly approach the NEMA head office at Nairobi with 10 hard copies and a soft copy to try to gain approval, which may take more than a month.

If the project report submitted is not approved at the screening stage, then a full EIA study is required. Conducting a full EIA study, according to informants K1 and K2, is a rigorous and expensive process that consumes a substantial amount of time. The steps are rather complex. For example, according to the EIA guidelines, the EIA study must start with scoping to identify and evaluate the key concerns, and then present those to aid decision making. Proponents are expected to develop terms of reference towards the end of the scoping. As per the EMCA guidelines, it is the responsibility of the proponent to address the issues mentioned in the terms of reference in consultation with an EIA expert. Further, the public participation process is more robust in an EIA study.

Wider public participation is conducted at the scoping stage as part of the EIA study. Informant K2 explained that it is mandatory to have a gazetted notice of the public hearing process published in local newspapers and announced on the local radio station. He further added that public participation at the scoping stage provides an opportunity for various surrounding or affected communities to find out about the project details; and various stakeholders including members from the non-profit sector, local administration, members of the local communities, etc., have the opportunity to participate, question, and express their concerns. Informant K1 explained that NEMA looks for evidence of public participation in the form of a copy of print media such as newspapers, gazetted notice, and evidence of radio announcements. NEMA has mechanisms to track the claims made by proponents about public participation as the organisation has representatives at the county level.

During the second phase of my fieldwork, I observed the consultation and public participation processes for two different EIAs. The first was consultation with 11 random people from the neighbourhood close to the site of a medium-risk warehouse project in Mlolongo town

in Machakos County. The project was located in an industrial setting surrounded by many other industries, especially related to construction. The staff of the respective EIA consulting firm from whom I had an invitation to observe the EIA public consultation process in Kenya approached people in the late morning who were working in different businesses in the town that was adjacent to the industrial area. The questionnaires had limited questions, starting with some personal information. Many people were hesitant to share their personal information on the questionnaire and most of them had no idea about the project nor any information on EIA. Most people just filled the questionnaires with limited personal information and left the questions on potential impacts unanswered.

I also attended a public hearing process for the high-risk 400 KV electric transmission line project in the proposed Konza City area in Machakos County. The public hearing process was facilitated by a consultant who was hired by the proponent and four employees of the proponent, including two women. The hearing process took place in an open public space close to the local communities where people were notified to come. In the more than two-hour process there were 32 participants, out of which only five were female. The process was divided into three segments: i. the introduction and information session, ii. the question and answer session, and finally, iii. the gathering of public opinion where 30 questionnaires were distributed among the participants and collected once they were filled. I observed that a few male participants dominated the question and answer session, whereas female participation was limited. Many participants, including all the females, simply wrote their names and signed their forms. The facilitator informed me that due to the cultural barrier it was difficult for him to get the female participants actively involved in the public hearing process. I did not see any effort from the facilitator to engage with the female participants.

The participation process does not end here. During the construction phase, proponents are expected to put up signage with basic project-related information for public display. People can access the information from the signboard, and if anything feels inappropriate, they can always inform NEMA. Informant K1 explained that people sometimes complain about the noise from late working hours or excess dust, etc. In some rural contexts, people from downstream rivers complain about problem caused by people living upstream, especially related to the sharing of water. According to informant K1, people in Kenya, except in certain religious communities, are empowered to raise their voices in such instances (i.e. in project related issues).

The approval process for an EIA study is similar to that of a project report discussed earlier in this section, except for at longer duration due to the complexity involved. If the report is approved, a license is issued by NEMA. If the report is rejected, it goes to the National Environmental Tribunal for another review and eventually to the High Court (in case it gets rejected by the tribunal) [EMCA, 1999].

Once the implementation phase of a project is over, there is a certain level of public engagement during the audit phase [informant K1]. During the initial audit (self-audit) phase, which is conducted by the proponents or EIA experts, community participation is expected. Since audit, according to informant K1, is part of environmental management, public participation is required. Environmental audit, however, was not a focus for this research.

Each project is unique, and informant K1 stressed it is important not to generalise the EIA process for all small-scale development projects. She cautioned that even small-scale agro-based projects may pose a significant threat to the local environment. For example, the use of intensive organic input (microorganism) or the introduction of a new variety of crops might have a significant impact on local biodiversity. A small-scale irrigation project, where there is a possibility of the diversion of a significant amount of water from a source, may have an impact on the downstream environment. These are some examples of potential environmental impacts associated with small-scale projects.

4.3 Community-based environmental assessment (CBEA)

In Chapter 1, I introduced the concept of CBEA, and it became clear that inclusion and just participation are key ingredients. The experience of the key informants and their perspectives provided a diverse picture of participation in the African context. My informants were aware of such processes, and in general they felt there was a positive developmental trend on the EIA landscape in Africa/Kenya. For example, key informant C1 indicated that “the idea of CBEA is to have a participatory EIA where communication happens from both sides rather than one way”. Key informant C2 added that “the whole point of conducting an EIA is to influence decision making and make the project more sustainable”.

Having noted these points, the perspective of proponents that I witnessed during public consultation/hearing processes in Kenya was that EIA is conducted mostly to fulfill the legislative requirements, not to satisfy larger societal goals like sustainability. Proponents, EIA experts, and the government representatives also sometimes endorse projects before the EIA

process is complete, which is strongly denounced in the literature (see Chapter 2). Furthermore, while sharing people's perspectives on participation in EIA, informant C2 suggested that the participation component for the EIA is being imposed on them merely to address the legislative requirement. From their research experience in Kenya, informant C1 noted that to correct some of this mindset "extra measures should be taken to make the CBEA more inclusive where participants should be educated and aware of the assessment process and how the inputs are being used".

The examples from the literature (see Section 2.2.3, Chapter 2), interaction with some of the informants, and my observation of public participation processes in Kenya made me realise that regardless of its importance, meaningful participation is still a distant dream in EIA in some sub-Saharan African countries, especially in Kenya. Key informant C3 stressed that "the notion of CBEA is that it should be designed and controlled by communities themselves". However, the question then arises, do communities, especially remote ones, have the capacity to design and conduct an EIA by themselves? Informant C2 explained that "many CBEAs for smaller projects do not even meet the thresholds of the requirements the way they are supposed to do the assessments – just because of the size and impacts of projects that are small".

Key informants C2 and C3 believed that in many CBEAs participants are not equipped to participate effectively, which further impedes the main purpose of the process, and hence they argued for capacity building of participants prior to the onset of any assessment. Informant C3 insisted that external actors, such as EIA experts or proponents, should invest some extra time in building the capacity of participants to enable a fairer process. However, C3 further cautioned that "when external actors control the entire process, participants do not trust the process, neither the system".

Spaling's years of scholarship in Africa echoes the issue of just participation in the existing format of CBEA. CBEA, according to Spaling [Personal communication in 2017], is continuously evolving over time, yet lacks efficacy in the assessment process, including inclusive and just participation. It is also evident that learning is important for communities to be part of the CBEA and contribute to decision making instead of just fulfilling legal formalities. Informant C3 further suggested that, "there will be a lot of learning for communities …. However, the learning exercise has to be started before the outset of the assessment process".

It was evident from the key informants' perspectives that the concept of CBEA is not unfamiliar to Africa. However, the problem lies with the fundamental values of CBEA. Without the ability of participants to contribute to the decision making, it would be challenging to expect a fair EIA, as indicated by informant C9. It became clear from the synthesis of my reading and consultation that community inclusion and just participation in EIA is still a challenge and that current CBEA practices fall short of addressing these key issues. Therefore, the need for reform in the current CBEA format is apparent.

4.4 Next generation CBEA

In Chapter 2 I provided an account of the concept and context of next generation CBEA as established through the literature review. As discussed earlier, next generation CBEA is comprehensive, value-driven, inclusive, and focused on sustainability, which is complex, multidimensional, and the core of this architecture. Next generation CBEA is all about developing a locally applicable EIA system that advances sustainability, i.e. environmental, sociocultural, and economic spheres, while avoiding trade-offs in order to ensure enduring wellbeing. For the practical and methodological application of next generation CBEA, the format proposed by Pope and Petrova [2017] in their scholarship on sustainability assessment was useful. I made an effort to incorporate these steps of sustainability assessment into the next generation CBEAs with some context-specific modifications that best suited the local context, in order to strengthen the sustainability component in the assessment process. Table 4.1illustrates the steps of sustainability assessment proposed by Pope and Petrova [2017].

Table 4.1 Steps of sustainability assessment

	Sustainability assessment steps
1	Decision to conduct a sustainability assessment
2	Identification of desired outcome (expectations from the project)
3	Establishment of sustainability goals and criteria for the decision
4	Identification of alternatives and options to achieve the desired outcome
5	Prediction and evaluation of the impacts of each alternative
6	Selection and enhancement of the preferred alternative
7	Approval decision and announcement
8	Implementation and monitoring (follow up)

In Chapter 2 I discussed the theoretical aspects of next generation CBEA while justifying the relevance of its four core components, i.e. sustainability, meaningful public participation, follow-up and monitoring, and learning. Key informant C4 agreed, "All steps must include

sustainability, which also includes public participation and learning". Due to the nature of the research, the entire CBEA process was designed to be participatory and to facilitate learning. The following section discusses the development of the four components I have identified as core, based on my research into EIA and CBEA in Kenya and the literature regarding next generation EIA. Each of these was discussed with the key informants for application in the CBEA context. In other words, I asked them to focus their thinking on how these aspects of next generation EIA could be implemented effectively through CBEA in order to develop a model that I could test in the field.

4.4.1 Sustainability

Sustainability, as discussed in Chapter 2, is a comprehensive concept for advancing CBEA. According to informant A1, "there is some literature on sustainability assessment but mostly in a descriptive format. Only limited literature is available in the prescriptive format". Informants A1 and C5 proposed that the generic criteria for sustainability assessment (Table 4.2) is one of the recommended prescriptive formats to consider.

These criteria were developed by Gibson [2006a, 2006b], where he proposed to look beyond the three-pillar model and consider an integrative model that addresses core sustainability issues. The generic criteria bring a holistic perspective to assessment that includes all the spheres of sustainability, and hence was highly recommended by informants C4, A1, and C5. As sustainability is not a destination to be achieved, I endeavored to incorporate the notion of sustainability into CBEA to advance the assessment process towards lasting wellbeing.

It was challenging to get the key informants to help me to translate the generic criteria into something more appropriate for CBEA, so that the EIA experts, as well as the participants in Kenya, would be able to apply them easily. Based on his experience, key informant C5 cautioned about hurdles in implementing the generic criteria. He further added "It's difficult to achieve everything what you wish for your research in Kenya. You are going to the field as a researcher and you have limited time and resources. You can't fix everything and you don't have power". Key informant C4 proposed some simplified, alternate terms for the criteria. For example, to address "intergenerational equity", he suggested that one can ask about the potential costs and benefits for future generations. Table 4.2 summaries a simplified version of the generic criteria for considering sustainability in the context of next generation CBEA, based on my discussion with key informants and consideration of literature.

Table 4.2 Simplified version of the generic criteria for Sustainability assessment

Criteria	Original terminology	Operational terminology
1	Socio-ecological system integrity	Wellbeing of local communities and the environment
2	Livelihood sufficiency and opportunity	Livelihood (income) opportunity for all
3	Intragenerational equity	Sufficient opportunity for the current generation, irrespective of gender, socioeconomic status, people with disabilities, etc.
4	Intergenerational equity	Sufficient opportunity for the current as well as future generations
5	Resource maintenance and efficiency	How to maintain current resources and use them efficiently
6	Socio-ecological civility and democratic governance	Participatory and democratic decision making through capacity building
7	Precaution and adaptation	Taking precautions and adapting to change
8	Immediate and long-term integration	Avoiding balancing and pursuing mutually seeking benefits

In addition to the generic criteria of sustainability, some informants shared other aspects that they considered important for the incorporation of sustainability in next generation CBEA (Table 4.3). All the key informants emphasised prioritising the local context. Informant A1 mentioned that "local communities matter: you can ask the community to define the term sustainability". Informant C4 insisted that I must ask the locals about their most valued ecosystem components. He further added that "it is equally important to know the future aspiration of local people pertinent to the proposed project". While consideration of local context matters, informants C4 and A1 recommended incorporating traditional knowledge as part of the assessment process. Both C4 and C5 recommended applying more than one criterion that best suits the local context, which might require modifying or combining criteria.

Consideration of alternatives was identified as equally important by all the informants. Informant C4 said that "it is important to compare alternatives to come out with what is best, better than justifying one thing that you are doing - whether it is a good or bad thing".

Table 4.3 Elements of sustainability

Original terminology	Operational terminology
Local context	Local needs and priorities, including ecosystem components, matter in CBEA.
Alternatives	Exploring different options and analysing each of them.
Trade-offs	Avoiding compromising on one factor for another.
Interconnectedness	Consideration of the environmental, social, and economic components as a whole.

Environmental trade-offs are quite common and widely acknowledged in the literature. Hence, integration or interconnectedness was repeatedly emphasised by informant C4. He proposed two basic criteria for trade-offs. First, trade-offs in any type of assessment need to be discouraged. He further suggested making the EIA process transparent so that people can fight against any unjustified trade-offs. Second, there should not be any justifications for displacing any resource where future generations might not have any access even if there is no representation from them. He further added that "communities must look beyond the present generation, and hence the distributional effects can be intergenerational". While enduring wellbeing was considered an important aspect of next generation CBEA, it was already a part of the generic criteria (see Table 4.2).

Interconnectedness was also highlighted in the sustainability assessment literature. Informant C5 justified the integration of all the spheres of sustainability as he noted: "people are naturally connected to the environment; it is easy for us to consider both the systems at the same time". Table 4.3 summarises the elements I considered in addition to the generic criteria for incorporating sustainability into the next generation CBEA frame.

4.4.2 Meaningful public participation

Public participation in next generation CBEA, as I discussed in Chapter 2, aims for civic legitimacy while reinforcing civic capacity through dialogue, discourse, and the sharing and exchange of ideas. Public participation in this context takes an active approach.

The role of the pre-CBEA phase is important to achieve meaningful participation. Key informant A2 could not think of any formula to achieve meaningful participation, except for being well prepared. Informants A2 and C6 recommended spending extra time understanding the

local context and aspirations of local people, and building relationships with them. Informant A2 further suggested that "it is also essential that people should get used to you before you start the research. It is not about just sharing information but also building trust. It's not about only you observing them but also they observing you and making a decision whether they are comfortable in sharing information with you". Informant C6 recommended understanding group dynamics within communities and interrelationships among people, in order to be able take any steps that may be needed to control the dominance of local elites.

Often relationship hierarchies are complex, and vary from culture to culture. While criticising the public consultation process held by proponents or governments at various places, informant A2 suggested that different strategies should be adopted for different categories of participants, such as youth and women depending on the local context to ensure their fair representation in decision making. Further, informants C6 and A2 suggested considering forming separate groups for men and women or youth and elders if required, which may help in managing the hegemony of local elites, men, or elders, while also respecting local cultural norms.

As early engagement is key to meaningful participation (as discussed in Chapter 2), informant C6 explained that for CBEA, "One must design the process from the beginning until the very end to make space for deliberations, shared decision making over the goal and objectives of the assessment". While cautioning about random brainstorming and the influence of local elites in decision making, he further recommended using structured, roundtable brainstorming for achieving effective participation.

Decision making is an important aspect of any participatory process. In a conventional EIA, according to informant A2, proponents ask for an opinion and then report the local opinion to decision makers on behalf of communities, which is often not appreciated. Informant C6 suggested that it is important to find the appropriate decision-making criteria that best suit the local context. He further added that in some contexts consensual decision making is preferred to decision making through voting. Therefore, informant C6 stressed that it is important to determine the decision-making process together with the community as early as possible, and noted that while sharing power among the proponents, regulators, and communities is important, it is equally essential for all the parties to be actively involved in decision making. For final decisions, informant A2 proposed inviting all groups (community participants) to present their

concerns. From his own experience, he further shared that participants feel confident and it is easier to talk to them when they see their views being legitimised and considered.

It is a challenge to consider all the views shared in an EIA meeting. Informant A2, therefore, emphasised the role of facilitators in providing as much information as possible for consideration. While cautioning about the varying capacities for understanding among different participants, informant C6 recommended not rushing to make final decisions and to include a few pauses if necessary. Informant A2 recommended spending extra time explaining the subject matter or repeating subject-related information to participants who might need some extra time or help.

Table 4.4 below highlights some of the measures I considered for facilitating meaningful public participation in next generation CBEA, based on the input I received, my experiences in Kenya as described above, and the literature.

Table 4.4 Key measures to facilitate meaningful participation

	Measure	**Explanation**
1	Fair notice well ahead of CBEA initiation	Participants should be adequately informed in advance of any meetings.
2	Early and ongoing	Participants should be part of the assessment process from the beginning through the last phase of the process.
3	Open and Transparent	Community members are expected to participate and make decisions for their wellbeing. Proponents are expected to share all information.
4	Inclusive and adequate representation	Participants from different socioeconomic backgrounds are encouraged to participate.
5	Deliberative	Participants are encouraged to engage in dialogue and discussions about a project to come to a final decision – not just filling out questionnaires.
7	Capacity building	The proposed project as well as the importance of the EIA process and related concepts should be explained to participants. Refreshments served and where possible compensation for time lost from work should be offered.

8	Adequate and accessible information	Project details are explained in local languages with an opportunity for Q and A.
9	Use of PRA tools	Workshops, transect walks, group activities are expected to be conducted to facilitate participation.
10	Informal follow-up meetings	To help to ensure learning and critical reflection, small informal follow-up meetings should be conducted.
11	Learning oriented participation	Efforts should be made to create a conducive environment for collaborative and mutual learning, such as through information sharing and dialogue.

4.4.3 Follow-up and monitoring

Follow-up and monitoring in next generation EIA, as discussed in Chapter 2, is itself a complete cycle that begins with monitoring, response to findings (of monitoring), communicating or sharing of those findings, and learning to ensure that the next assessment improves on the previous. While disapproving of the term 'EIA follow-up', key informant A3 clarified that "perhaps the term is not ideal as it potentially sends an implicit message that EIA ends with the approval decision, and the activities occurring after that point are something of an 'add-on' rather than being an inherent part of EIA". Therefore, proponents, especially small businesses, may be apprehensive of follow-up and see it as a burden that impedes usual business. Nonetheless, informant C7 did not believe that follow-up and monitoring are designed to target any specific proponent.

Regardless of the similarity in EIA processes, the legislative requirement for EIA follow-up and monitoring may vary from region to region. Informant C7 stated, "who does it (follow-up and monitoring) can be very different and this is where you get into a great deal of variability". For example, in certain cases, proponents sign up voluntarily to carry out follow-up and monitoring in order to improve their performance while complying with the regulatory requirements within the EIA approval conditions. Informant A3 noted that in many cases, once a project or program gets approval, attention from the public and regulators moves away it can be easy for proponents to get away with doing little follow-up and monitoring. Informant A3 further stated that conducting follow-up and monitoring in many cases might be purely conditional at the time of approval and that is implicitly tied up with the regulators. It all depends on who the

proponents are. However, informant C7 mentioned that in the context of CBEA, follow-up should be the responsibility of project proponents. From his experience, informant A3 found that in many African countries, where the regulators adopt an authoritarian approach, trust and cooperation can be an issue. He further felt that follow-up in such a scenario might not be as effective as it should be, especially where governments prioritise their own agendas, such as employment generation or economic growth for political and economic gains, and poor, local communities often pay the price for this.

While discussing challenges, informant C7 highlighted financial (financial viability and who pays) and structural (dealing with bureaucracy) challenges, and further added transparency and flexibility. Access to the monitoring data is problematic and, in many cases, they are not made public. He further underlined the incapability of systemic structures to accommodate and implement new learnings.

Many good practices for follow-up and monitoring are available from across the world. Informant A3 suggested that small communities, who are often neglected in many parts of the world, can be partners and contribute meaningfully to follow-up and monitoring. Informant C8 emphasised openness and trust-building among participants. Sometimes the proponent-hired, external experts may not have all the necessary information. However, informant C7 suggested that once (local) communities are involved and trust the process, they may share important information to address this knowledge gap. He further added that "the more they (communities) are involved, the better for the project, as they would be happy to contribute". From his experience, informant A3 stated that the complete lifecycle of an EIA includes the management plan, which entails provisions for follow-up and monitoring and is open and transparent, enabling communities act as ombudsmen, which would be central to next generation CBEA in his mind.

However, the sharing of responsibilities between proponents and communities can be challenging, and therefore appropriate measures should be taken. Informant C4 explained that it is important to have clarity regarding what needs to be monitored and who could do it. Informant C8 added, "It is the capacity building or training or quality assurance of the monitoring process to ensure that trust is ongoing or the fostering interests are ongoing". Informant C7 further explained:

"Communities must participate in the follow-up process and should have access to all information. It is important to talk to communities continuously and address their priorities and needs as well. The process takes time and has to be done in a respectful and empowering way. In a community-based approach, people are wise enough to understand the steps as they are also part of the environment".

The need for strong legislation to enforce follow-up and monitoring in EIA is felt across the world. Several financial institutions, such as the World Bank or the IMF, which have huge investments in many countries, including Africa, have their own internal follow-up mechanisms that are applied across the region. Informant A3 explained that "many other agencies or banks wouldn't finance projects without a good management plan because the liability comes down the line and their reputations may be at risk". He further stated that the role of follow-up and monitoring is significant because while the short-term objective is certainly concerned with the protection and management of the environment, the long-term learning objective is to change people's behaviour. According to informant A3, the size of a project does not matter, but what matters is sustainability.

Informant A3 emphasised that next generation CBEA should have a good design and a good management plan; the management plan must start prior to project construction and must include roles for community members. A good design is necessary to minimise adverse impacts and maximise benefits. The environment is changing rapidly and so is the climate, and therefore it is important to address these changes. Stringent EIA legislation may not be useful for accommodating all of the environmental and socioeconomic changes happening around. Hence, informants C7 and A3 both recommended adaptive management practices as part of a next generation CBEA's management plan. Further, informant A3 stressed the importance of the operational aspects of a good and flexible management plan in the context of CBEA to achieve desired outcomes. He further added that next generation CBEA must provide for a transition in the follow-up and monitoring activities from the proponent to the concerned communities.

Table 4.5 summarises the key features for follow-up and monitoring as part of next generation CBEA, based on my analysis of the literature, interviews, and my own experience.

Table 4.5 Key measures considered for follow-up and monitoring

	Key measures	Explanation
1	Open and transparent	The design of the environmental management plan that entails follow-up and monitoring should be open to community members.
2	Inclusive & participatory (collaborative approach)	Community members are expected to consider monitoring as part of the CBEA, and to be included in the management plan that establishes follow-up and monitoring.
3	Capacity building	Proponents are expected to spend time to develop the capacity of the responsible community members in relation to monitoring. Any equipment needed should be incorporated into the project costs.
4	Adaptive management practice	A flexible management plan is expected to accommodate changes.
5	Sharing of responsibilities	Communities are expected to take their share of responsibility along with the proponents and government agencies.
6	Traditional knowledge	Proponents are expected to consider (local) traditional knowledge in developing and implementing follow-up and monitoring programs.
7	Access to information	Proponents are expected to share all relevant information with community members.

4.4.4 Learning

Meaningful public participation, as discussed in Chapter 2, can facilitate social learning when people collaborate, get actively involved in deliberation and discussion about a project, and reflect on things related to the project to make decisions. I also established why learning, such as capacity building that may lead to a shift in participants' behaviour and values towards sustainability, is so important to consider in the context of EIA and next generation CBEA processes. Social learning is a two-way process, and according to informant E1 it must include explicit (from books and formal or non-formal learning) and tacit (based on experience) knowledge. He considers tacit knowledge as more influential, and it might be more relevant in the African context. Key informants C6 and E2 explained that it is vital how one defines social

learning in the CBEA context: if social learning involves both the process and outcome, then the process must entail collectively defining the problem and identifying various solutions as well as working together (group actions) to implement those solutions iteratively.

As the learning process is vital to social learning, it is important to have an appropriately designed learning environment to facilitate the process. Informants C6 and C9 did not find much difference between the ideal conditions of learning and meaningful public participation (see Chapter 2), rather they think both overlap. It is a challenging process to facilitate deliberations where people come together to deliberate on priorities, needs, and aspirations, and informant C6 emphasised that one must be skillful and commit to taking the necessary time without rushing. Therefore, informant C9 explained, "it is important to prepare a guidebook with a clear agenda and how are you going to do and what do you want to achieve out of a particular activity".

Creating ideal conditions to facilitate the process of social learning is crucial, and this must be considered in the design of next generation CBEA. Informant C9 suggested planning for a next generation CBEA prior to the involvement of EIA experts in the assessment process.

While sharing some of the ideal conditions that facilitate learning, informant C9 explained that it is important to have: access to clear and complete information (in non-technical and local languages), a coercion free and safe atmosphere, opportunity for participants to raise their voices, and participants willing and able to consider alternatives, assess their views objectively, and reflect upon the subject matter. Therefore, understanding local languages would be an advantage, however, if that is not an option, learning a few words in the local language could be instrumental in rapport and trust building, and this was strongly recommended by informants C1 and C9.

Social learning, as informant E1 pointed out, is dynamic because it is a continuous process rather than a finished product. He added that it is important to make the process inclusive, open, and transparent, and people should get equal opportunity irrespective of their social background. Moreover, it is not just about new knowledge, but also about dealing with social dynamics, including power and gender dynamics. Informant C9 further cautioned about the local gender dynamics, where in certain communities women may not feel comfortable to share their views in front of their husbands or elderly male members. Age dynamics can also be a challenge among participants as youth may not feel comfortable talking in front of their elders. Hence, she suggested it would be useful to have an understanding of the local context and to

build rapport and trust with local communities and organisations, as this would help to facilitate the learning process without disrespecting the local culture, norms, and traditions.

Certain practical measures must be taken if one aspires to create the ideal conditions for learning in CBEA. The PRA toolbox was identified as an effective set of methods and was therefore highly recommended by the key informants for facilitating the learning process. Informant C9 explained how meticulous planning on organising workshops and having some gaps between consecutive workshops helped her in getting reflections from the participants in her case. For example, she suggested to make the CBEA process open to all community members, find a place and time suitable to them, have personal engagement with community members (e.g., personal invitations), and using small groups (suitable to the local context) for discussions where participants feel safe and comfortable in sharing their views. Informant E1 recommended using a participatory mapping exercise to understand the complexity in relationships among participants, which could contribute to the smooth functioning of the CBEA process.

A short trip with some of the community members to visit a similar project to observe and learn from the practical exposure was recommended by multiple informants, and hence contacts with any local non-profit organisations could be useful for visiting one of their project sites. If such field visits were not possible, informant C9 suggested inviting community members from other, similar projects to share their experiences, as horizontal communication (community members learning from the members of other communities) was seen to be especially effective.

Informant E1 further suggested remaining vigilant to notice changes in networks. What is often implicit in a social learning outcome, which many people may not mention, is ‘trust’, he added. Social learning outcomes, however, are not necessarily always positive, and it is important to learn from our mistakes. Observing changes as social learning outcomes may take years, informant C6 cautioned while quoting Measham [2013].

Table 4.6 below summarises the potential key features (for facilitating the learning process) and indicators (for considering social learning outcomes), which I developed from my analysis of the literature, interviews, and experience in Kenya, and which I considered for integrating into the next generation CBEA.

Table 4.6 Key features (for the process) and indicators (for the outcome) of social learning

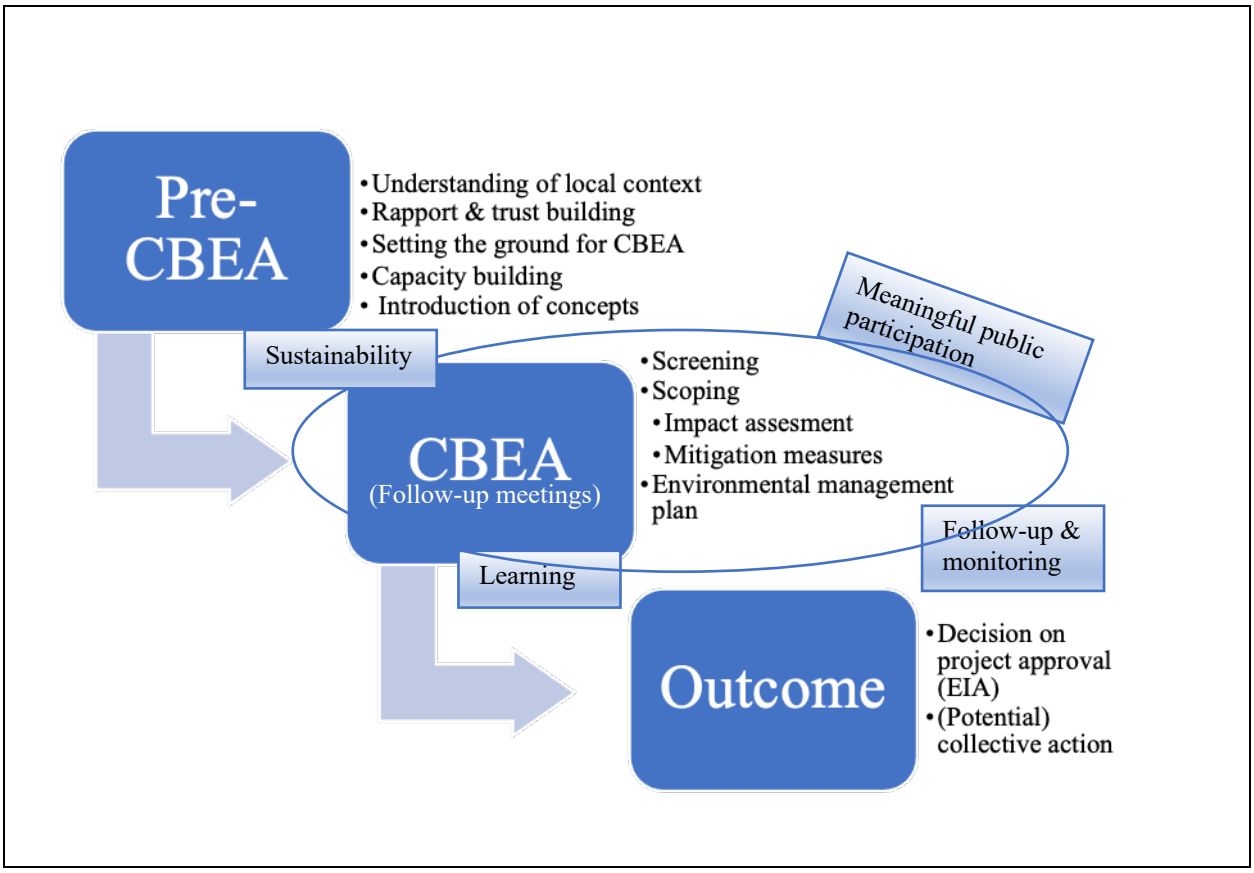
	Key features for the facilitation of social learning in the next generation CBEA	**Explanation**
1	Effective communication	1. Provision of interpretation 2. Use of simple (non-technical) language as much as possible
2	Collaboration	1.Collaborating with proponents, EIA experts, academic, government officials, and community members
3	Understanding of the local context	1. Understanding of the local environment 2. Socioeconomic dynamics 3. Rapport & trust building 4. Hiring of assistants from the local areas
4	Conducive learning environment	1. Suitable time & place 2. Open & transparent process 3. Informal setting 4. Freedom of expression
5	Meaningful participation	1. Advance notice 2. Inclusive and fair representation 3. Active participation (discussions, Q & A) 4. Deliberative participation approaches
6	Critical reflection & thinking	1. Exposure to multiple ideas 2. Asking questions 3. Time between events
7	Field visits	1. Field visits to similar sites 2. Interaction with people from similar project sites
8	Use of PRA tools	1. Participatory mapping 2. Transect walks 3. Workshops 4. Group activities
9	Follow-up discussions	1. Provision for clarification 2. Multiple follow-up meetings with participants
	Key indicators of social learning outcomes	**Explanation**

Individual level	Cognitive	New ideas/ concepts participants learned through their participation in the CBEAs.
	Relational	Greater recognition among participants of how their actions affect others.
	Moral	Establishment of new skills learned and changes in practices.
	Trust	Development of trust in the process and people running it. The degree of influence participants had on CBEA decisions.
Collective level	Collective action	Collective action among participants related to CBEA learning (e.g., protest against the project; collective demands from proponents).

4.5 The next generation CBEA architecture

The architecture is a graphic representation of my conceptualisation of next generation CBEA, which was built on the information generated through my review of the literature, key informant interviews, and my experience of consultation and public participation in Kenyan EIA. Figure 4.1 shows the various stages of next generation CBEA (i.e. pre-CBEA and CBEA), including the steps, and expected learning outcomes. The pre-CBEA stage reflects the preparatory steps, such as understanding the local context, capacity building, etc. for the main assessment process. The preparatory stage is not mandatory for EIA, but as some of the key informants had recommended first developing an understanding of the local context and people, I incorporated this stage as an important aspect of the next generation CBEA framework. The main CBEA phase reflects the steps of the EIA process, as well as the four core components of next generation CBEA. I conducted some follow-up meetings with selected participants, which were not part of the main CBEA phase, to address any issues they were left with, which was not possible during the main CBEA workshops. The last box reflects the expected CBEA and the potential learning outcomes. While this next generation CBEA process is generic and applicable to anywhere, the outcomes will be context specific.

Figure 4.1 The architecture of next generation CBEA



4.6 The next generation CBEA frame

The next generation CBEA frame I have developed above incorporates the basic principles of CBEA, and then brings together what I have learned from the literature review as well as the key informant interviews conducted during the first phase of the fieldwork. The aim of this frame was to develop guidelines that would reflect the core values of next generation CBEA. Besides the integration of the four key components, i.e. sustainability, meaningful public participation, follow-up and monitoring, and learning, the frame was designed to help facilitate democratic decision making through establishing the desire to include participants from diverse socioeconomic background. As mentioned earlier (see section 1.3), power issues, especially the dominance of elites, are problems with current CBEA practice, the frame was therefore designed to promote the participation of different groups (e.g., women, youth, etc.) and establish ample opportunity for it to occur in the CBEA processes. Within this frame I planned to use PRA as the primary tool for engagement and project level decisions (Burde, 2004). Since PRA has also being criticized for privileging men (ibid.), I established precautions within the frame to avoid

such type of power and dominant issue while designing the CBEA frame. For example, the frame has the provision for group activities (part of PRA) for different groups (e.g., women, youth, etc.). The visioning exercise is another activity that is part of the frame where I envisioned that community members in groups (e.g., women, youth, etc.) would have an opportunity to clearly articulate their expectations.

The frame is divided into two phases, i.e. pre-CBEA (Table 4.7) and CBEA (Table 4.8). The pre-CBEA activities mentioned in Table 4.7 were designed to set the groundwork for the next generation CBEA. The CBEA (Table 4.8) phase describes the activities for carrying out the actual EIA. The CBEA frame continued to evolve up until it was implemented in the first case study site. For example, the generic criteria of sustainability as a package, were initially planned to be the part of the next generation CBEA frame; however, my experience of the pre-CBEA phase at the first case study site led me to change the approach to incorporating the generic criteria into the next generation CBEAs (see Chapter 6).

While the next generation CBEA frame is meant for generic application anywhere, some of the expected CBEA/learning outcomes identified in Tables 4.7 and 4.8 refer to the specific legislative context in Kenya. The practical application of the next generation CBEA frame, including details of the process and tools used in the field to implement it, is described in Chapter 5.

Table 4.7 The next generation CBEA frame: Pre-CBEA phase

Pre-CBEA activities			
Goal	**Activities**	**Rationale**	**Expected CBEA & learning outcomes**
To introduce myself as well as the next generation CBEA	**What:** **Introductory meeting** Brief meeting introducing the project and EIA team, describing the intended CBEA activities in the community in the coming weeks, sharing the EIA team's expectations of the community, and discussion of group activities.	To become familiar with the community. To increase understanding among the participants by repeating the purpose of the EIA team visits.	I become known to the community. Community members were expected to get familiar with the purpose of the EIA team visits.

	Question & answer session **Who**: EIA team, NGO staff, project proponents, community leaders and members. **Resources required**: Nil.	To introduce the next generation CBEA concept. To practice just and fair participation in the CBEA decision making through the representation of participants from diverse sociocultural background. To begin to answer community questions and get a sense of the local context.	Fair and just participation in the CBEA decision making.
To understand the local context and resource dynamics **Social network analysis**	**What**: **PRA tools:** For example, participatory mapping, Venn diagram, Transect walks, and workshops. **Participatory mapping**: Mapping out local topography. **Venn diagram**: Participants were expected to make Venn diagrams in different groups to illustrate their social networks. **Who**: EIA team, community leaders, adult men and	To become familiar with the local topography and landmarks. To become aware of the organisations, groups, or societies functioning within the community and if there are any important outside connections. In addition, identifying who is part of resource management	EIA team and participants expected to have an increased understanding of the local topography as well as gender and power dynamics and community outreach. Community members are expected to have an understanding of social connections in relation to the project.

	women, youth, & NGO staff (if available). **Resources required**: Stones, dry sticks, sands, dried leaves, chart sheets, markers, etc. Prior to closing, the date for the next meeting and agenda should be discussed.	and conflict resolution, and who has power or authority.	
To understand the local topography.	**What**: **PRA (Flexible)** **Transect walk:** Transect walk around some of the landmarks identified in the map (such as the water stream, forest, farm fields etc.) **Who:** Transect walk was depending on the availability of selected participants who were willing to share their perspectives.	To understand local participants' perspectives on various natural resources through casual interaction in informal settings.	An increased understanding of resource issues and people's priorities regarding ecosystem components. Community members are expected to have a better understanding of the intention of the CBEA, and the informal setting was expected to contribute towards trust building.
Experiential learning	**What:** **Exposure visit:** Field visits to other similar project sites (if possible but not mandatory). **Who:** EIA team, selected community members (e.g. elder, adult, youth, and women), and community leaders.	To have an increased understanding of the potential project (project details, how it works, pros and cons, etc.) and what aspects to consider during the CBEA.	An increased understanding of the impacts (both positive and negative) of the already functional project on local people.
Decision-making agreement	**What:**	To create a safe, respectful, and	An increased understanding of

	Community meeting: Participants are expected to identify the decision-making criteria for the CBEA that are appropriate to the local context.	democratic environment for deliberation and discourse where participants would feel free to express their opinions. To address the power (gender) and issue of the dominance of local elites.	the local decision-making process for the smooth functioning of the CBEA. Creation of a fear free and welcoming environment for the marginalised members.
Exploring local priorities and defining sustainability in local terms (Please see the table 4.2 to refer to the generic criteria for sustainability)	**What:** **Visioning exercise:** Participants are expected to identify various concurrent issues and their vision for the future.	To understand and set up the local criteria for sustainability through critical thinking and discourse.	Trust building among the participants by prioritising their needs and articulating their vision.
	Defining sustainability: Participants are expected to define sustainability, keeping in mind their priorities and vision for the future, from the simplified version of the generic criteria, which were explained and translated into local languages.	To identify the needs and priorities of different groups (i.e. women, youth, etc). To build the capacity of people through exposure to different concepts and ideas.	
Introduction to CBEA	**Question & answer session** **What:** **Information session on CBEA:** Participants were expected to learn about CBEA, its necessity, and its practical application.		Increased understanding of the practical application of local sustainability criteria in CBEA.

	Question & answer session **Who**: EIA team, community leaders, community members, and NGO staff. **Resources required:** A few long white sheets of paper, sticky notes, markers, pens, and pencils. Prior to closing, the date for the next meeting and agenda are to be discussed.	To familiarise participants with the CBEA steps for meaningful participation.	Participants are expected to gain knowledge of CBEA and the importance and application of sustainability in decision making.

Table 4.8 The next generation CBEA frame: CBEA phase

CBEA activities			
Goal	**Activities**	**Rationale**	**Expected/ learning outcomes**
Description of the existing environment	**What:** **Workshop 1:** Participants are encouraged to contribute and acquire knowledge on the local biophysical and socio-economic environment as it specifically relates to the project. Participants, especially elders, are encouraged to share observations of unusual climatic conditions or variability, landscape change, or disasters.	To become aware of the existing environment. To encourage community members to think critically about their future.	Increased understanding of the local environment. Critical thinking on environmental change.
Project Justification and consideration of	**Justification of the proposed project**: Participants are encouraged	To introduce the justification of the proposed project to	Increased understanding of the viability and

alternative options.	to discuss various alternatives to this proposed project, find out if there are any better solutions, and analyse the justification for the proposed project.	the community members.	justification of the proposed project.
Screening	**Assessment of the need for the CBEA:** Participants are expected to gain an understanding of EIA (CBEA stage) and its first step. **Question & answer session** **Who**: EIA team, community leaders, participants (elders, adult men, and women, youth). **Resources required**: A few long white sheets of paper, sticky notes, coloured markers, pencils, and erasers. Prior to the closing, the date for the next meeting and agenda are to be discussed.	To educate people about CBEA and related activities. To fulfill the legislative requirements for EIA.	An increased understanding of EIA and its steps. Participants learn the justification for the EIA.
Preparation for the next stage and to explore group dynamics	**What:** **Voluntary, casual interaction:** Participants are encouraged to join an informal interactive session where they are reminded	To reflect on the learning from the previous meeting and to clarify any misunderstanding or confusion.	An increased understanding of the group dynamics during the CBEA.

	about the major discussion points from the last meeting, their issues related to their understanding, or group dynamics in the CBEA workshop.	To get feedback on the CBEA experience, especially the dynamics during the workshop from various participants, focusing on those who are from marginalised groups.	Improved understanding through intimate interaction in an informal setting.
Scoping	**What**: **Workshop 2**: Identification of the most valued ecosystem components.	To identify the ecosystem components most valued by the local communities and their key concerns in relation to the proposed project.	An increased understanding of the local priorities regarding the ecosystem components.
Impact assessment through the lens of locally defined sustainability criteria.	**Assessment of potential impacts**: Participants are encouraged to brainstorm and identify potential project impacts on the most valued ecosystem components.	To identify potential project impacts through the locally-defined sustainability lens and to consider how to manage trade-offs.	An understanding of various potential impacts through collaboration, discourse, and deliberation.
Impact assessment-further	**Assessment of some other impacts**: Participants are encouraged to be part of the assessment of additional impacts, such as climate change, which would be led by the EIA team. **Question & answer session** **Who**: EIA team, community leaders, project proponents, community members (elders, adult men, and women, youth), and NGO staff.	To consider a wide variety of impacts to achieve maximum gain from the project for a sustainable future.	Scoping would be conducted with full public participation as per the NEMA requirement.

	Resources required: A few long sheets of paper, coloured markers, pencils and an erasers. Prior to closing, the date for the next meeting and agenda should be discussed.		
Preparation for the next stage and to explore group dynamics	**What:** **Voluntary follow-up meeting:** Participants are encouraged to share their experience from the last meeting, and experience working with fellow community members, and a quick discussion on what was learned.	To reflect on the previous meeting, which may help them contribute effectively to the subsequent workshop**.** To identify the social dynamics and other participation related issues experienced in the CBEA workshops, especially regarding those who are from marginalised groups.	An increased understanding of various participation issues, including group or power dynamics. An increased understanding of the key things learned during the previous CBEA workshop.
Mitigation measures **Decision making whether to proceed with the project or not**	**What**: **Workshop 3:** Participants are encouraged to brainstorm, think critically, and find solutions to the already identified negative impacts. The EIA team should facilitate the discussion. **Community's decision on the proposed project**: Participants should decide whether to proceed with the project or not after a detailed analysis of various aspects and potential impacts.	To avoid all the potential negative impacts and to promote positive outcomes, which must meet the local sustainability criteria and trade-off rules. To have a clear understanding of the proposed project and potential outcomes.	Mitigation measures for the potential project impacts are identified, as per the legislative requirements. Increased awareness and understanding of potential impacts and suitable solutions that are available locally.

Management plan and follow-up & monitoring	**Designing of the environmental management plan**: Participants should participate in design of the management plan, which includes follow-up and monitoring activities, with the guidance of the EIA team and project proponents. Community members are encouraged to share responsibility in the monitoring and follow-up of project activities once their capacity is built through training and awareness. In case there is an existing resource management or similar group, they are expected to share the responsibilities as well. Elderly people are also expected to contribute through their traditional knowledge or local support system. The responsible parties are encouraged to meet periodically to discuss any new developments or any changes related to the project. Community members are encouraged to participate in the self-audit, post project completion. Community members may be compensated for their participation in the follow-up and monitoring activities depending on the	To avoid confusion regarding sharing responsibilities and to have clarity on how to proceed with follow-up and monitoring.	Increased stake and ownership in the proposed projects. Increased transparency through community involvement in the follow-up and monitoring process.

	suitability of the local condition. The environmental management plan should be flexible, with an adaptive format to accommodate changes. The proponents should have a separate budget for monitoring. For example, depending on the management plan requirements, there might be a need for periodic soil or water testing, etc. **Question & answer session** **Who**: EIA team, community leaders, project proponents, community members (elders, adult men and women, youth), and NGO staff. **Resources required:** A few large white sheets of paper, coloured markers, pencils, and erasers.	To determine the cost (for follow-up and monitoring) and to decide how to arrange the required financial resources.	

4.7 Chapter summary

This chapter has outlined the practical interpretation of next generation CBEA, based on information from the literature review, key informant interviews, and my experience of EIAs in Kenya. The Kenyan EIA legislation also had a major influence in developing the next generation CBEA frame. The architecture presented above is a schematic representation of next generation CBEA, whereas the frame is more like a guidebook that goes through the CBEA process step by step.

As described in Section 4.5, the architecture of next generation CBEA provides a broader picture of the CBEA process. The architecture summarises the entire next generation CBEA process and includes the key CBEA phases and expected outcomes. While the CBEA phases shown in the architecture can be applied to any context the outcome will be specific to the local context. For example, the main CBEA phase represents the EIA process steps (i.e. screening, scoping, etc.) that are common to EIA across the world. The four core next generation components, i.e. sustainability, public participation, follow-up and monitoring, and learning depicted in the main CBEA phase are intended as described in the most recent EIA literature. The key informant interviews helped translate the notion of next generation CBEA into practice. For example, some informants recommended sparing additional time to understand the local context and build a good rapport with community members prior to the beginning of the process. Therefore, the next generation CBEA includes a unique preparatory pre-CBEA phase.

The frame, on the other hand, is a guidebook where the steps of next generation CBEA are described in detail. My exposure to Kenyan EIA legislation and active EIA cases helped me understand the legislative procedures and EIA practice in Kenya. I incorporated this context-specific information into the design of the frame. As the frame was still a work in progress, I made some changes during the first case study site. During the implementation of the next generation CBEA in the first case study site, I realised that the incorporation of the generic criteria of sustainability as a package was too challenging due to limited resources and time. Therefore, I used an integrated approach to impact assessment to facilitate a holistic assessment process. The challenges faced during the implementation of the next generation CBEA frame are described in Chapter 6.

Chapter 5
Next generation CBEA in practice

"People are part of the environment. It was good that we discussed everything openly. This CBEA was useful to spread awareness among people and to sensitise them…" (Participant JM, February 2019).

5.1 Introduction

In chapter 5, I provide details on the implementation of next generation CBEAs at two different case study sites – the GAKAKI and MIUKA projects. This chapter establishes how the various key components of my next generation CBEA frame were tested at the two sites. I describe background information of the projects, followed by outlining the next generation CBEA processes, which included the pre-CBEA and the CBEA phases.

5.2 GAKAKI small-scale irrigation project

5.2.1 Background

The proposed project is situated in the Kahuro sub-county of Murang'a in central Kenya (Figure 5.1). The region's geo-topography is deeply dissected by many crisscrossing rivers and streams and with available water there are highly enriched volcanic soils, which make the area highly suitable for agriculture. The population is more than a million and because of the conditions a majority of people rely on farming a variety of crops, especially tea and coffee, vegetables and tropical fruits, such as pineapple. The diverse climatic conditions, ranging from equatorial to semi-arid, creates however, some challenges for farming, especially in the eastern part of the county, where the main crops are coffee and pineapple. The Kikuyu tribe in Murang'a is especially well known for its agriculture and dairy farming. Murang'a is, however, no different when it comes to the impacts of climate change that affect the county, which has led to conflict due to water scarcity. Insufficient and erratic rainfall has made more and more people rely on irrigation water over time. Many farmers in this region still rely on bucket irrigation, manually withdrawing water from nearby rivers or streams.

The GAKAKI project, which draws its name from a portmanteau of the Gatuya, Kahithe, Kariara, and Kianjogu villages involved in it, started with the purpose of reducing rural poverty by introducing irrigation water into the farming communities in this region. The objectives of the GAKAKI project are to alleviate extreme hunger and poverty, to install an irrigation water

system, to support agriculture production for subsistence needs as well as for the local and outside market, to improve local environmental and financial conditions, to engender employment opportunities, and to promote women's empowerment and gender equity. The GAKAKI small-scale irrigation project was first conceptualised in 1994, with construction of the intake starting in 1999. This project is registered as a community-based self-help organisation, especially for irrigation, under the Ministry of Culture and Social Services within Murang'a County.

Being a community-based project with limited capacity, GAKAKI has experienced many challenges. Financial difficulties have adversely shaped the implementation of the small-scale irrigation project. The top-down approach and existing bureaucracy, according to some of the project members, are major hurdles on the way to accessing county-level grants or funding from the central government. One of the project members informed me that projects funded through county governments in Kenya take longer to accomplish.

Current project status

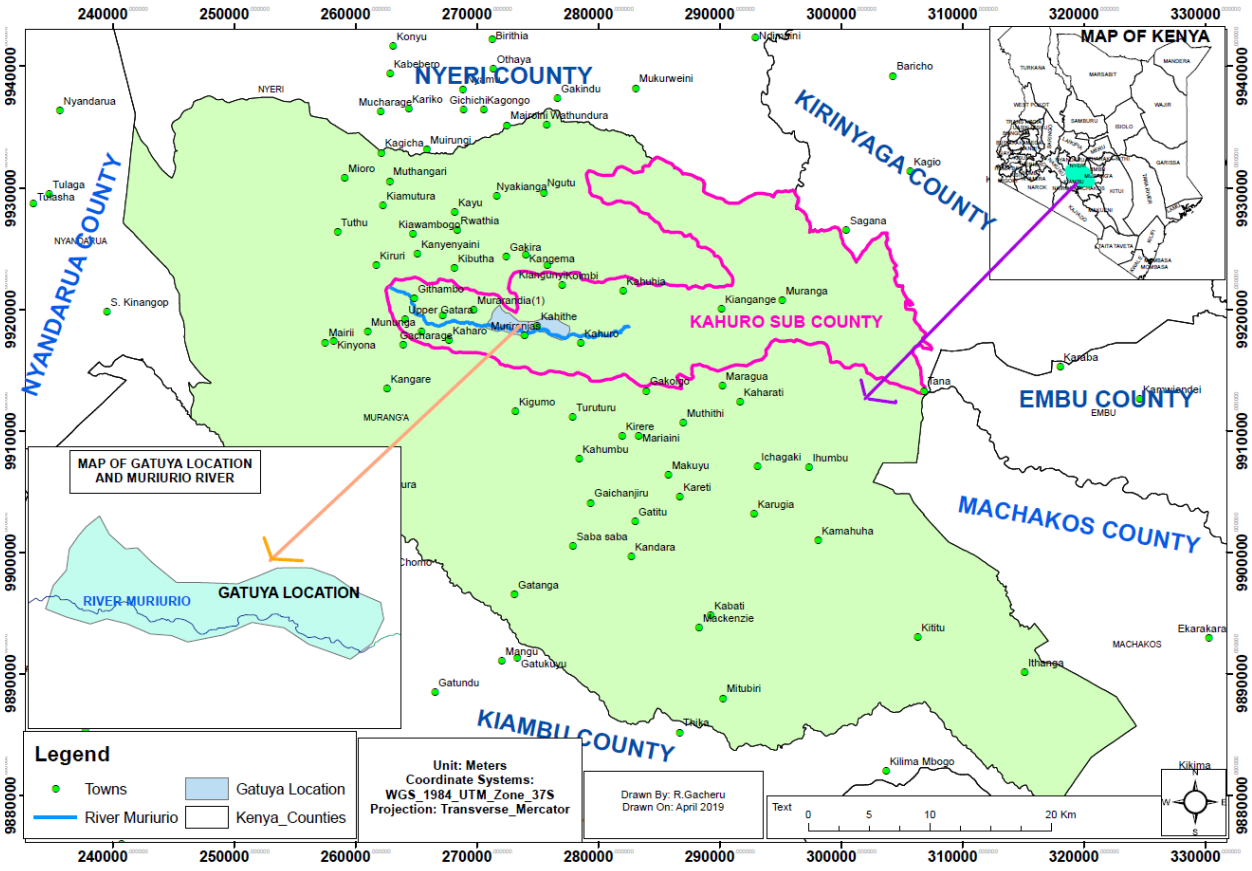
GAKAKI is an ongoing project where the construction of the water intake was completed in 2001 and the first storage tank was built in 2016. The intake is approximately eight km from the GAKAKI project office. The water is channeled to some of the user locations through gravitational flow. The circumference of the main pipe is roughly 6 inches. The GAKAKI project supplies water to beneficiaries over a 20 km radius. The diverse terrain of the area restricts supplying water through gravitational flow, and therefore the location of storage tanks to supply water to the surrounding area has spatial importance.

There are approximately 680 registered members of the project. The fees collected from the members are largely used for the maintenance of the intake and pipelines, the salary of the plumber (US$ 70/month)[12], and is expected to be used for the construction of the proposed storage tank. The members also contribute their labour when required, and their monthly fee may be waived depending on the quantity of labour they provide. However, there are some privileged beneficiaries, such as the Governor of Murang'a and the disability centre who get water supply through GAKAKI without any monthly contribution. With the limited pipeline connections, the existing water tank uses only 20% of its 250m³ capacity and so supplies only a small number of

[12] 1 US$ = 100 Kenyan Shillings (By default during 2018 - 19)

beneficiaries from the Kahithe village. Overall, there are less than 100 direct beneficiaries, but many more indirect beneficiaries.

Figure 5.1 GAKAKI project location in Murang'a County **Credit:** Richard Wamunge



The proposed project

The proposed project aims to build two (out of the three initially planned) additional storage tanks with a capacity of 400m³ each, as well as pipeline connections for the existing and proposed tanks, in order to benefit 250 members primarily from the Kariara and Gatuya communities. In addition to these beneficiaries, the pipeline connections are expected to help some beneficiaries from Kahithe village and its extended area, including Kahithe and Gitura secondary schools.

The estimated cost is calculated to be US$ 89,104.59 out of which GAKAKI aims to fundraise US$ 2,040 from all the members as part of the community contribution. GAKAKI has already obtained a users' permit from the Water Resource Authority (WRA) to extract water from the Muriuriu River.

One of the major requirements for accessing the necessary funding for the proposed project is obtaining an EIA clearance certificate from NEMA. The GAKAKI project did not have to conduct an EIA for the previous construction work as it was not a requirement at that earlier time. However, as the project chairman noted, EIA has become mandatory in recent times and a clearance certificate has become a condition to obtain county-level funding from the central government.

Project location

Kahuro sub-county is situated in the eastern part of Murang'a (Figure 5.1), which receives less rainfall than its western neighbours. One of the proposed storage tanks is expected to be constructed within the boundary of Kahithe Secondary School. The location for the other storage tank is yet to be finalised. The land under which the pipelines were expected to pass was already identified and permission sought from the respective landowners. The location was selected by the GAKAKI management committee because it was the only available public land at a high enough altitude that the irrigation water could easily reach the beneficiaries through gravitational flow.

5.2.2 Next generation CBEA of the GAKAKI project

As the GAKAKI project needed an EIA for the construction of the proposed storage tanks and additional pipeline connections a next generation CBEA was a perfect fit. The month-long assessment process followed the advanced model of CBEA as described in Chapter 4, with pre-CBEA and CBEA phases, which were designed to also meet the legislative requirements of EIA in Kenya. The EIA expert retained for the project assessment agreed to join some of the CBEA sessions as per his availability. Table 5.1 describes the major steps for the pre-CBEA and CBEA phases, which were discussed with the EIA expert and the GAKAKI management committee during the initial meeting. I did not discuss the follow-up meetings as they depended on the demand and availability of participants. The duration for each pre-CBEA and CBEA workshop was three hours.

Table 5.1 Steps of the GAKAKI project pre-CBEA and CBEA phases, Murang'a

Steps	Pre-CBEA phase	Timeline	CBEA phase	Timeline
1st	Introductory workshop (personal introduction, introduction to CBEA, discussion of group activities, etc.)	21st December 2018	Screening (justification of the project, consideration of alternatives, identification of ecosystem components, etc.)	31st December 2018
2nd	Setting the groundwork for CBEA (participation rules, etc.)	24th December 2018	Scoping (impact assessment)	8th January 2019
3rd	Prioritising local needs and defining sustainability	28th December 2018	Scoping (mitigation measures)	15th January 2019
4th	-		The environmental management plan (follow-up and monitoring)	21st January 2019

Once the process was accepted by the EIA expert and GAKAKI management committee, the committee members took responsibility for informing the community members. The committee made announcements on multiple occasions using various platforms, such as in churches and project meetings. The time and venue for the introductory workshop were finalised by the committee. In the meantime, I had moved to the village to spend time in the community, and the chairman had generously offered his place to me. I also hired a research assistant from the community who was recommended by the management committee.

5.2.2.1 Pre-CBEA phase

The pre-CBEA activities were designed to understand the local context, to build rapport with the local people, and to comprehend their needs and priorities. It was equally important for me to be observed by the locals to build a trusting relationship. The sessions I conducted as part of the pre-CBEA activities were mostly informative and aimed at setting the foundation for the CBEA.

1st workshop: Introduction

The introductory workshop was held at a public place, the premises of the Assistant Chief's office compound, at Kianjogu. The location was chosen by the proponent due to its

central location and close proximity to all four affected communities. After a delay of an hour and a half, the workshop finally began with approximately 20 participants. All the participants were seated in a semi-circle with the women concentrated on one side. Gradually, many more people joined the workshop. The meeting continued for two hours and by the end approximately 60 participants, including the GAKAKI committee members, were present. The chairman assisted in translating and interpreting the conversation to help participants comprehend the discussion. As most of the participants were Christians, this meeting started and ended with a prayer. Table 5.2 describes the activities conducted during the first workshop.

Table 5.2 Summary of first workshop activities in the GAKAKI CBEA, Murang'a

Activities – Planned	**Activities – Conducted**	**Description of activities**
Personal introduction	Personal introduction	I shared some personal information and explained the purpose of my visit.
Introduction to CBEA	Introduction to CBEA	I explained the basic concept of EIA and its relevance. I also explained the entire process of CBEA including the pre-CBEA phase.
Discussion of group activities related to the next generation CBEA	Formation of groups	The participants were encouraged to form groups according to their preference.

The introductory workshop was the first step in the trust-building process. Besides learning about the purpose of the meeting, participants became aware of the legislative requirement for an EIA of the GAKAKI irrigation project. Many participants learned about EIA for the first time. I answered their queries, such as regarding the duration of CBEA and, the role of the community members in the entire process.

Participants formed several groups, including adult men's groups, adult women's groups, and some mixed groups. Each group elected a leader based on their communication skills and leadership qualities, and leaders were allocated some responsibilities, for example, organising group members and taking notes. As this was an introductory meeting, we did not have any group activity planned for the day. The community members were excited about the CBEA and agreed to allocate three hours in the afternoon for each meeting, which, especially for farm labourers and women, was during their usual free time.

Prior to the conclusion of this meeting, participants discussed the day and found an appropriate time for the subsequent workshop. Participant agreed to meet at the same location for all the subsequent workshops due to its central location and for being the best available public place. I thanked all the participants and GAKAKI committee for their time and effort, and the Assistant Chief for allowing us to use his office premises to conduct the workshop.

2nd workshop: Setting the ground for the CBEA

I conducted the second workshop on Christmas Eve, which was the date selected by the participants of the first workshop. Despite my concern due to a 56-minute delay in starting, more than 50 participants attended the second workshop. All the group leaders were reminded by the research assistant to bring their fellow group members to the second workshop. This time we had some new members including four youth between 17 to 30 years old. I invited the youth and encouraged them to be part of all the activities. Table 5.3 describes the list of activities that were conducted during this workshop.

Table 5.3 Summary of second workshop activities in the GAKAKI CBEA, Murang'a

Activities – Planned	Activities – Conducted	Description of activities	Explanation
-	Interactive reminder session about CBEA	I explained the importance and function of CBEA by giving some practical examples.	This activity was not initially planned, but I did it to help participants understand the complexities of CBEA.
-	Participation and decision-making rules	Participants developed participation and decision-making rules.	
		I requested the group leaders to use the following rules:	
	Talking sticks	Only one person at a time speaks, and they should have the talking stick.	

Activities – Planned	Activities – Conducted	Description of activities	Explanation
	Matchstick discussions	In a group, each time a member speaks s/he must surrender one stick, and once the given sticks are gone, s/he may no longer speak.	
	Decision making	Everyone agreed to consensual decision making.	The activity on decision making was originally planned for the later part of the pre-CBEA activity.
PRA activities (participatory mapping, resource use matrix, and Venn diagram)	-	-	The participatory mapping exercise was moved to the later part and I did not use the resource matrix as it was not a priority. I prioritised activities to meet local time availability.
Social network analysis	Social network analysis.	I invited two participants to make a diagram while other participants provided their inputs (see Figure 5.2).	

Figure 5.2 Social networking analysis

By the end of the session, participants had learned about the basics of EIA, ground rules for participation were set up and approved by the participants, and participants agreed to accept consensual decision making for final decisions, provided each member/group justifies the reason for their argument. This decision-making criterion was suggested by the participants who attended the workshop. Participants shared their social network through the Venn diagram, where they explained their everyday social interaction. For example, most of the community members interact with the head of the community, the local vet, school teachers, and members of various institutions, such as banks, and government departments within the area frequently. However, residents go to the bank, the office of the agriculture department, or the nearest hospital, which are situated outside their community, only once in a while.

Transect walk to the existing tank

As part of the next generation CBEA framework, I planned a field visit with participants to the existing water tank. This activity was conducted outside the regular workshop times to avoid time conflict. Eleven participants joined me in the approximately 700-meter-long transect walk. The GAKAKI committee informed me that the storage tank was completed in 2016, with a capacity of 250 m^3 liters. We had an interactive discussion at the site, and community members shared their experiences with the earlier project, such as the challenges faced during the construction (dust, bad road conditions, etc.), compared their life before and after the construction of the storage tank, and described some of their uncertainties regarding the future (e.g., climate change, etc.).

3rd workshop: Prioritising local needs and defining sustainability

After a 30-minute delay, I began the workshop with a reminder about EIA and CBEA. Initially, there were 30 participants, but we had more than 50 members by the time we finished. It was challenging to keep track of the exact number as some participants left during the workshop. Prior to the onset of workshop activities, participants were requested to sit in their previously-formed groups, and group leaders were encouraged to organise their groups. There were nine groups in total. In this workshop, I used a nominal group technique for group activities. Each group followed four basic steps: (i) generating ideas in groups, (ii) recording the ideas on paper, (iii) deliberation and discussion with all participants, where each group had an opportunity to justify their views and learn from others, and (iv) selection of final idea by consensus. All the major decisions made during this workshop were noted on a flip chart for future reference.

The first group activity was to identify the main challenges that local people face in their everyday life, and were further encouraged to visualise future challenges for the next generations. The participants were then encouraged to openly explore and discuss various potential solutions to their water accessibility issues.

The next group activity was to define sustainability in local terms. I first introduced the concept of sustainability to the participants. As there was no exact word for sustainability in the Kikuyu language, I used the term "Gutoria muno", which translates to "the things that last longer". I explained the eight elements from the generic criteria of sustainability, which were expected to be part of the locally defined sustainability criteria, interpreted into Kikuyu. As part of the visioning exercise, I encouraged the participants to choose the two most important elements from the generic criteria while also visualising their future generations.

Table 5.4 Summary of third workshop activities in the GAKAKI CBEA, Murang'a

Activities – Planned	Activities – Conducted	Description of activities	Explanation
Determining the decision-making process	-	-	This activity was already conducted in the first workshop (see Table 5.2).
Prioritising local needs and problems, and finding potential solutions	Prioritising local needs and problems and finding potential solutions	I used the nominal group technique to have participant groups identify issues	

		and potential solutions (see Figure 5.3).	
Defining sustainability in local terms	Defining sustainability in local terms	I explained the generic criteria of sustainability and through the nominal group technique, participants chose the criteria that best suited their local needs.	I used various examples and responded to questions raised by participants.

Five out of nine groups identified access to water (for either domestic or farm use) as their main issue. Participants recommended rainwater harvesting, expanding the existing intake, building additional storage tanks, drilling borehole wells, and recycling water as potential solutions to their current water accessibility issue.

As part of the local sustainability criteria, five groups chose 'avoiding balancing and pursuing mutually seeking benefits' as their priority, and 'resource maintenance and efficiency' was chosen by four groups. As intergenerational equity is an important aspect of Kenyan EIA, participants agreed to include it since they felt the importance of their future generations. Hence, the local criteria for sustainability included these three elements from the generic criteria, which were selected by the participants as best suited to their local needs and priorities.

As usual, the workshop ended with the concluding prayer. Participants decided on the date for the next workshop before leaving the venue.

Figure 5.3 a. Group discussions **b.** group presentation

5.2.2.2 CBEA phase

In Chapter 4 I outlined the list of activities to be implemented for the next generation CBEA frame (see section 4.6). In this section I describe the core steps that were followed during the CBEA phase, including screening, scoping (impacts assessment and mitigation measures), and the development of the environmental management plan (follow-up and monitoring). I also describe the optional follow-up sessions held after the CBEA to debrief with participants.

4th workshop: Screening

Screening was the first official next generation CBEA activity. Fifty-two community participants attended the screening workshop, along with the EIA team and the GAKAKI management committee members.

I started the workshop with a quick reminder of the discussion from the previous workshop, especially focusing on the sustainability criteria established. Table 5.5 describes the activities conducted during the screening stage.

Table 5.5 Screening exercise in the GAKAKI CBEA, Murang'a

Activities – Planned	Activities – Conducted	Description of activities	Explanation
Project justification	Justification of the GAKAKI small-scale irrigation Project.	The GAKAKI chairman explained the purpose, relevance and benefits, current status, and future vision of the proposed project.	All this information was delivered in the local language.
Consideration of alternatives	Consideration of project alternatives.	The EIA expert and participants analysed the potential of various alternatives that were suggested by participants in the previous workshop.	Participants also compared the alternative options with the proposed project.
-	Information session on Kenyan EIA.	The EIA expert explained the relevance of EIA, its legal aspects and stages, the purpose of the screening phase, and the role of NEMA.	This activity was originally planned to be conducted as part of the pre-CBEA activity.

Activities – Planned	Activities – Conducted	Description of activities	Explanation
Description of the local environment	Discussion of the local environment.	Participants shared their thoughts on the local environment (e.g., rainfall, nearest river) and socioeconomic profile (e.g., livelihoods)	
-	Identification of the most valued ecosystem components.	Participants, in groups, identified their most valued ecosystem components from the environmental, social, and economic categories.	This activity was originally planned for the scoping stage.

As screening involved multiple activities, there were multiple outcomes (see Table 5.6). Participants gained a detailed understanding of the proposed GAKAKI project and all queries were addressed by the chairman. Participants learned about the technical and legal aspects of EIA in Kenya, the role of NEMA, and the various stages of EIA. Participants also shared information on their local environment, such as rainfall, the nearest river, forests, etc., as well as describing the local socio-economic profile, such as livelihoods.

The consideration of various project alternatives, which was part of the next generation CBEA and also required for the Kenyan EIA (per the EIA guidelines and administrative procedures, EMCA, 1999), involved participants in calculating the estimated cost and benefits of each alternative with the guidance of the EIA expert and the chairman of GAKAKI. For example, the construction of boreholes was considered not feasible because of the high cost without any surety of water availability. The EIA expert also cautioned about the rocky terrain and a possible additional layer of legislative requirements for the use of groundwater. One of the participants shared his experience of boreholes, where he spent a good amount of money exploring for water in his backyard without any success. Ultimately, participants considered the building of storage tanks and adding pipelines as the best available option within the given context.

The only group activity for the workshop was to identify the most valued ecosystem components. The group activity was not rigidly structured, but rather was a free-flowing discussion. Participants chose water (all groups) and soil (five out of nine groups) from the environmental components of water, soil, forest, and mountains. The EIA team finalised water and soil as two valued ecosystem components after the GAKAKI project committee requested to include soil as the second important environmental component. Health, selected by six groups, was chosen as the most important social component. As this was largely a farming community, livelihoods, especially farming and diary, was chosen as the most valued economic component.

Table 5.6 Outcomes of screening in the GAKAKI CBEA, Murang'a

Activities conducted	Outcomes	Explanation
GAKAKI project justification	Total cost of the project & available funding through community contribution (See the section on project status above) A plan that includes the building of one more storage tank, adding pipelines, and expanding the water intake.	
Consideration of project alternatives	Alternatives considered: rainwater harvesting (not sufficient & unreliable) boreholes (expensive & not guaranteed) expansion of water intake (future plan) construction of storage tank(s) & some additional pipelines (preferred option) recycling of water (not feasible to address the need)	Construction of storage tanks and adding pipeline connections were considered the most economical, reliable, and simple solution that was best suited to the local needs and context.
Information session on Kenyan EIA	Participants learned about: relevance of EIA EIA stages	

Activities conducted	Outcomes	Explanation
	legislative requirements of EIA in Kenya, including penalties and fines the role of NEMA	
Discussion of the local environment	Participants described: rainfall (Long & short seasons) nearest forest (40 km) Nearest river(s) (Muriuriu & Kayahwe) vegetation (native tree species, such as Mugumo, Muiri, Moringa, etc.) livelihoods (Farming, dairy, & wage work)	Farming of coffee and maize is widespread as they are the cash crops. However, many residents grow vegetables and pulses. Some youth are engaged in the transportation business.
Identification of the most valued ecosystem components	Participants selected: water & soil (environmental) health (social) livelihoods (economic)	Water and soil received equal numbers as the environmental components. Livelihood, was given the utmost priority.

Transect walk to the intake site

The transect walk with some of the management committee members to the water intake on the Muriuriu River was very informative (see Figure 5.4). This walk was not a mandatory requirement for the Kenyan EIA, but was useful for me to gain a comprehensive picture of the GAKAKI irrigation project, especially before the scoping stage. Four members of the GAKAKI management committee joined me and my research assistant in the eight-kilometer-long informal walk.

On the walk I observed the tree species and the topography, and the committee members explained the importance of coffee farming and wage work at coffee processing units, which we passed on our way to the intake. Upon our arrival, the chairman explained the physical structure of the project. We also discussed the health of the river water as a side of the river was covered with some invasive plant species. It was equally important to observe the surrounding farmlands

and we discussed the risk of water contamination and riverbank erosion, especially in the rainy season. Table 5.7 summarises the outcomes of the transect walk.

Table 5.7 Outcomes of transect walk in the GAKAKI CBEA, Murang'a

Figure 5.4 Transect walk with GAKAKI committee members

Points discussed	Explanation
Physical structure of the existing GAKAKI project	Information on the existing pipeline structure, etc.
Health of the river water.	Presence of invasive plant species in river water was a matter of concern.
Potential risk of water contamination.	Water contamination from nearby farmlands.

5th workshop: Scoping (impact assessment)

Scoping was a significant step in the next generation CBEA that immensely contributed to the project report required for the Kenyan EIA screening. This step was different from scoping in Kenyan EIA. As per the EIA guidelines and administrative procedures (EMCA, 1999), if a project is determined to require a full EIA study after the screening process, then the proponent is required to go through the scoping stage (see section 4.2, Chapter 4). However, in order to collect all the information required in a project report for the Kenyan EIA screening, I, the EIA expert, and the GAKAKI management committee all agreed to follow the steps of a full EIA, which fit well in the next generation CBEA. Due to a burial in the community, only 29 participants attended the workshop.

To gain a better understanding of the proposed project, I invited the participants and GAKAKI committee members to visit the proposed storage tank construction site. The chairman had already sought permission from the principal of the Kahithe Secondary School for this brief exploration visit to the project site. Twenty-five participants joined the exploration visit, which was followed by the scoping exercise described below (Table 5.8).

Table 5.8 Scoping activities (impact assessment) in the GAKAKI CBEA, Murang'a

Activities – Planned	Activities – Conducted	Description of activities	Explanation
-	Exploration visit.	The chairman justified the technical and legal reasons for choosing the site.	Initially, this was not part of the scoping event; however, I included it so that participants would have a better understanding of the site while considering project impacts.
-	Participatory mapping exercise (Figure 5.5a).	The chairman and participants drew the map of the GAKAKI Project, with tanks and pipeline connections.	The participatory mapping exercise was originally planned as part of the pre-CBEA activities.
Identification of most valued ecosystem components	-	-	This activity was conducted in the screening phase.
Impact assessment exercise	Impact assessment exercise	I used the nominal group technique to engage with the participants in examining the potential impacts of the proposed project on their most valued ecosystem components. The EIA expert oversaw the entire impact assessment exercise (Figure 5.5b).	

From the exploration visit to the proposed project site, participants learned about the relevance of the project location and various technical and legal aspects of the chosen site. For example, participants learned the reason for choosing such a higher place so that the water could be supplied through gravitational flow. Participants became aware of the overall project location from the participatory mapping exercise, which explained the locations of the intake, the

proposed storage tank site, and the pipeline connections (see Figure 5.5a). Table 5.9 describes the various positive and negative impacts of the proposed project identified by the participants during the workshop. These impacts were identified primarily from the locally defined sustainability lens, where intergeneration equity, avoiding balancing and trade-offs, and interconnectedness were considered within the local context.

Figure 5.5 a. Participatory mapping **b.** EIA expert interacting with participants

Table 5.9 Outcomes of scoping (impact assessment) in the GAKAKI CBEA, Murang'a

Impacts	**Environmental components**			
	Water		**Soil**	
	Current generation	**Future generation**	**Current generation**	**Future generation**
Positive	Access to irrigation water. The impact was considered high and long term.	Future generations will have access to irrigation water.	Improved soil quality in the local area where members will have access to water. The impact was considered medium.	Future generations may benefit from better soil quality.
Negative	The water level at the storage tank may go down due to excess/ careless use of water.	-	Intensive and extensive farming resulting from more reliable water access may degrade the soil quality in	Future generations may struggle due to poor soil quality.

	The post-construction impact was considered low and short term.		the long run due to the use of excess chemical fertilisers and pesticides. The impact was considered high and long term.	

Impacts	**Social component** **Health**	
	Current generation	**Future generation**
Positive	Improved health conditions of the local people because of access to sufficient, nutritious, and a wide variety of locally-grown food. The impact was considered high and long term.	Healthy future generation.
Negative	Increased health risk due to excessive use of chemical fertilisers and pesticides in farming without taking appropriate precautionary measures. The strength and duration of the impact depends on the actual increase in farming and chemical use as well as the type of resultant health problems.	May have an adverse impact on the health of future generations.

Impacts	**Economic component** **Income**	
	Current generation	**Future generation**
Positive	Improved standard of living because of increased and diversified income from increased farming activities. The impact was considered high and long term.	Increase in overall wellbeing.

Negative	People may misuse/ waste money generated through increased income.	-

Once the impacts were identified, the EIA expert distributed 30 questionnaires (see Appendix I). The participants were expected to fill out the questionnaires after the scoping exercise was completed, in order to meet the requirements of NEMA. Participants were expected to provide information on the proposed project (i.e. name, location, objectives, etc.), whether or not the project location was susceptible to natural hazards like earthquakes or flooding, the benefits of the project, expected project impacts, etc. Not all the participants were fluent in English and hence the EIA expert explained each question in Kikuyu. Participants decided the date and time for the follow-up meeting and the next workshop prior to the concluding prayer.

6th workshop: Scoping (mitigation measures)

The workshop to consider mitigation measures was delayed by 30 minutes due to an unfortunate death within the community and because of unexpected torrential rainfall. Thus, a smaller number of participants were expected for the workshop, but in the end 33 participants came. As usual, we started the meeting with a prayer followed by a quick recap of the previous meeting. Table 5.10 describes the activities that were conducted during this workshop.

Table 5.10 Scoping activities (mitigation) in the GAKAKI CBEA, Murang'a

Activities – Planned	Activities – Conducted	Description of activities	Explanation
-	Identification of indirect impacts.	Participants assessed additional and indirect impacts from the sustainability lens of resource maintenance and efficiency. All the impacts were identified through the nominal group technique.	This activity was originally planned as part of the previous session; however, due to running out of time it was pushed to this section.
-	Identification of additional effects (i.e. potential long-term impacts).	The consideration of such long-term effects was new to participants; the management committee explained	-

Activities – Planned	Activities – Conducted	Description of activities	Explanation
		the potential long-term impacts.	
Mitigation measures	Mitigation measures.	I used the nominal group technique to engage the participants in developing mitigation measures for the already identified negative impacts.	-
-	Filling out questionnaires.	Once the scoping phase was completed, participants filled in the questionnaires. The research assistant and some participants helped those who could not understand or write in English.	Participants could not fill in the questionnaires given in the previous workshop as the scoping phase was still ongoing. Once, participants examined the potential negative impacts and developed mitigation measures, they had all the information needed.

Participants identified some of the indirect impacts and learned about potential additional, long-term impacts from the lens of the locally defined sustainability criteria of resource maintenance and efficiency. Access to enough water, lack of sufficient clear water (i.e. issue of water contamination), and wastage of water (due to broken pipes or leaks) were the major concerns discussed in the workshop. The GAKAKI management committee, in collaboration with the research team, shared the identified other effects with the remaining participants. The major other effects discussed were salinisation, siltation, and the potential increase in the number of beneficiaries. The following mitigation measures were suggested by the participants.

Access to enough water for irrigation (especially during dry spells/ climate change)

- Careful/wise use of water
    - Water rationing (supply of water to different communities on an alternating basis)
    - Use of sprinklers for irrigation

- Public awareness of efficient use of water
- Report to the management committee in cases of water misuse
- Penalties or guidelines for offenders

Prevention of soil degradation

- Construction of terraces to prevent soil erosion
- Practice organic farming
- Training and awareness of organic farming

Prevention of diseases

- Practice of organic farming
- Minimal use of chemical fertilisers/pesticides
- Use of clean water

Prevention of the water wastage

- Reporting leakage to the management committee/plumber

Minimisation of salinisation

- Testing water quality with two different samples – one from the intake and another from the storage tank
- Training/awareness of community members

Minimisation of siltation

- Periodic cleaning of the intake and main pipe

Prior to the end of the workshop, 30 participants-filled questionnaires were collected and the date for the next workshop was decided.

Figure 5.6 a. Participants sharing key findings **b**. The management plan in progress

7th workshop: The environmental management plan

The environmental management plan was the culmination of the next generation CBEA and the formal requirements of the Kenyan EIA (screening) process. Forty-one participants were present in this final workshop. The research assistant was assigned the task of registration and writing the minutes for NEMA. In order to refresh participants' memory, I encouraged participants in groups to share the key findings, starting from the pre-CBEA workshops on sustainability through to the CBEA workshop on mitigation measures (Figure 5.6a). The participants used the flip chart for reference and the entire discussion was in Kikuyu. All the participants were offered cold beverages and bread as a symbol of appreciation for their time and participation in the CBEA.

I invited one of the most regular female participants to record the environmental management plan as I was busy facilitating the workshop (Figure 5.6 b). During the development of the management plan, the GAKAKI management committee and project members consensually agreed to share follow-up and monitoring responsibilities according to their respective capacities. The follow-up and monitoring component of the next generation CBEA was addressed in developing the management plan. A copy of the plan was given to the EIA expert for his reference, which he was expected to use for the final project report for NEMA. Table 5.11 summarises the environmental management plan.

Table 5.11 The GAKAKI CBEA environmental management plan, Murang'a

Impacts	Mitigation measures	Monitoring indicators	Responsibility	Cost	Timeline
Misuse of water	Educating and spreading awareness of the problem within communities Reporting to the management committee Guidelines for penalties	Minutes Reports Register (Record book)	GAKAKI management committee	From members' contributions	
Wastage of water (Leaks/ broken pipes)	Report to GAKAKI management committee/ plumber	Register	Community members GAKAKI management committee	Members' contributions	
Water contamination (salinisation)	Periodic testing of water quality Training and educating farmers	Laboratory report Payment receipts of water testing Register	GAKAKI management committee Community members	Members' contributions	Quarterly
Siltation	Periodic cleaning of water intake at Gatuya, main pipes, and storage tanks	Payment vouchers	GAKAKI management committee & Community members	Members' contributions	Twice a year
Access to enough water (dry spells/	Water rationing	Water rationing schedule	GAKAKI Management committee &	Members contributions	

Impacts	Mitigation measures	Monitoring indicators	Responsibility	Cost	Timeline
climate change)	Careful/ efficient use of water		community members	Individual investments	
Soil degradation	Training and awareness of organic farming The practice of organic farming Soil testing		Community members	Individual investments	
Health issues	Education and awareness of organic farming and healthy living Regular health check-ups	Register	GAKAKI management committee & community members	Individual investments	
Issues related to construction	Monitoring of construction work	Register	GAKAKI management committee		
Post-construction issues	Post-construction follow-up and monitoring	Register/ report	GAKAKI management committee & community members		

The management plan was developed collaboratively, with community members and the GAKAKI management committee actively participating. The environmental management plan used an adaptive format as per the requirements of the next generation CBEA frame. The sharing of responsibilities between the proponent (GAKAKI management committee) and the community members was also part of the next generation CBEA. For example, the management committee agreed to take responsibility for construction-related work, whereas some of the community members who had previous training agreed to spread awareness of organic farming.

During the process, participants were free to ask questions. The chairman of GAKAKI responded to the queries raised by the participants. This was the last workshop for the next generation CBEA in Murang'a. I thanked all the CBEA participants and the GAKAKI management committee for providing me an opportunity to experiment with next generation CBEA for their project, and for their patience, time, and cooperation.

Follow-up meetings

Follow-up meetings were organised with a limited number of participants during the course of the next generation CBEA. The purpose of these meetings was to help participants address learning-related issues. I would meet at a convenient location with the participants from different groups, mostly in the afternoons. The role of the research assistant was crucial in scheduling the follow-up meetings, interpreting, and sometimes leading discussions. In the follow-up meetings, participants would revisit the findings from the flip chart, and had the opportunity to ask as many questions as they wanted. Participants were encouraged to share their learning-related challenges or any other problem faced during the CBEA workshops.

5.3 MIUKA irrigation project

5.3.1 Background

Kirinyaga County, which inhouses the MIUKA irrigation project, is also the home of Mt. Kenya, one of the major tourist attractions in Kenya. Snow melting from Mt. Kenya is the water tower that feeds the county's six major rivers. Topographically, the county is divided into three major regions; the highlands, the midlands, and the lowlands. With a tropical climate and equatorial rainfall pattern along with the water sources, this county is one of the major crops producing counties in Kenya. From cash crops, such as tea, coffee and rice farming, as well as animal husbandry are the major livelihood pursuit for more than half a million residents of this county.

Like Murang'a, the Kikuyus in Kirinyaga County are also known for their farming abilities. The farmers of Kirinyaga face similar challenges to their Murang'a counterparts, and hence the importance of and demand for irrigation water has consistently increased over a period of time. The MIUKA project largely represents the beneficiaries of Miuu and Kamunyange sub-

locations[13] in Kirinyaga. With an aim to raise the standard of living of the project members, the irrigation project was first conceptualised in 2010 and was registered as a community-based organisation under the Ministry of Gender and Social Services in Kirinyaga. The purpose of the MIUKA project is to supply irrigation water to all of its members. The objectives are to: increase food security, create employment in order to increase household incomes, and to generate foreign exchange. Since its inception, the management committee has been raising funds for the project. Like the GAKAKI project, MIUKA has had a challenging experience with accessing county-level funding.

Current project status

Unlike GAKAKI, the MIUKA project has not started any construction work. Since its beginning, the MIUKA project members have invested their time in organising themselves and developing a proper project plan. There are 330 registered members in MIUKA and there is already a cap on the number. The management committee comprises nine members, including two women.

The estimated cost of the proposed project is US$ 691,099.4. MIUKA wants to fundraise US$ 26,000 through community contributions, out of which they have already collected US$ 19,800. MIUKA has already secured funding up to US$ 350,000 through KFW, a German-based, state-owned development bank. The central government of Kenya has agreed with KFW to top up the project with US$ 175,000. The remaining amount is expected to be raised as a loan from all the 330 members for five years.

The proposed project

The members of MIUKA aim to construct a water intake on the Nyamindi River with two off-take chambers – one to address the siltation problem and another for the sluice valve. The construction of a 350 mm diameter main pipeline and 13 sub-main pipes are part of the project. In order to help the diversion of water into the off-take chambers, MIUKA wants to construct a 29-metre weir. The main pipeline is expected to be up to six km long before branching out to other areas.

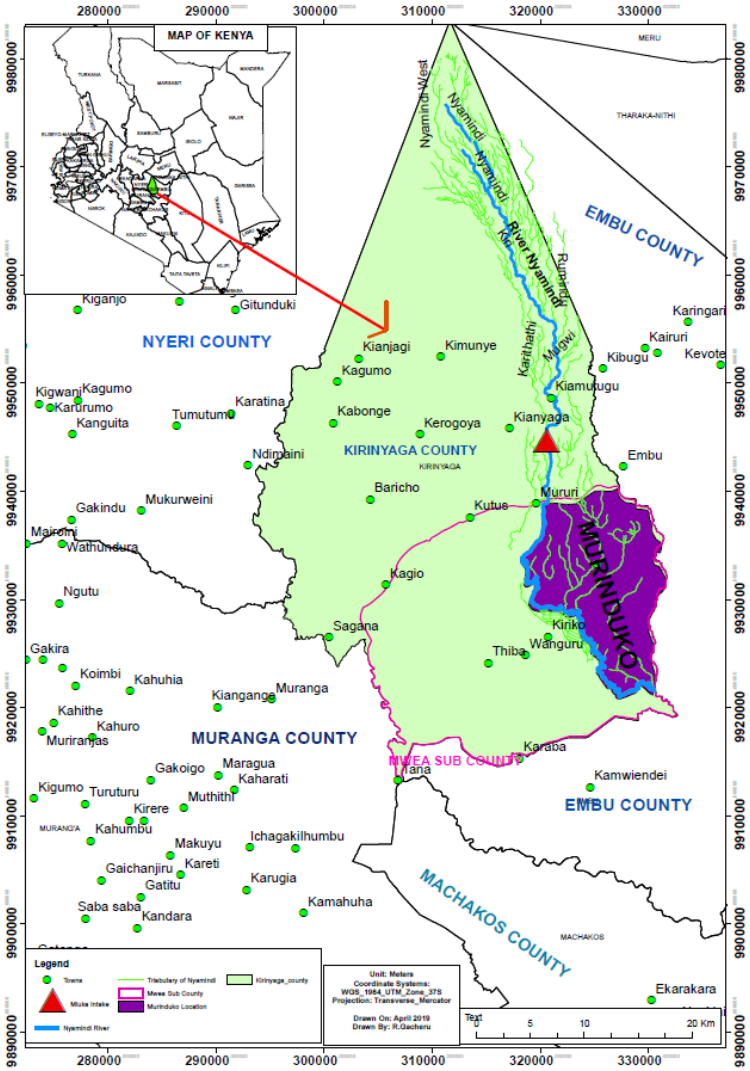
[13] A sub-location in Kenya is the administrative sub-division of a location. For example, in this case, under Kirinyaga county, Mwea is one of the four electoral constituencies. Murinduko is one of the locations in Mwea constituency, which have four sub-locations.

Project location

The MIUKA Project is located on the Nyamindi River in the Mirichi Sub-location of Njukiini Location within the Gichugu Sub- County of Kirinyaga County (Figure 5.7). A majority of the project's beneficiaries are from Murinduko Location in Mwea East Sub- County. The location of the project is approximately 145 km north of the capital city of Nairobi, and the nearest town is Embu. The intake site is approximately six km from the two sub-locations (Miuu and Kamunyange) where most of the farmlands are.

The location of the proposed MIUKA project on the Nyamindi River, shown as a red triangle in Figure 5.7, was suggested by the Water Resources Authority (WRA). The Rupingazi River, which is closer to most of the farmlands, was not considered suitable for the project due to the lack of enough flow. According to the WRA, many farmers are withdrawing water using bucket irrigation from both the rivers. People, as per the WRA instructions, are not expected to pump water from these rivers for large scale farming or any other purposes.

Figure 5.7 MIUKA project location in Kirinyaga County **Credit:** Richard Wamunge



5.3.2 Next generation CBEA of the MIUKA project

The next generation CBEA for the proposed intake was conducted over a period of five weeks at Togonye village in the Mwea East Sub-County of Kirinyaga County. The duration of the MIUKA CBEA process was shorter than for GAKAKI due to the urgency of the required project report and the upcoming rainy season. Farmers have a busy schedule in the rainy season, and I was told that it would be challenging for them to attend the CBEA workshops during that time. Furthermore, the assessment process was already started by the EIA expert, but public participation had been challenging for her. Hence, my involvement was very timely, and I was considered a valuable addition to the ongoing assessment process. Table 5.12 describes the steps

of the next generation CBEA that was conducted in Kirinyaga. The duration of each workshop for the pre CBEA and CBEA was three hours.

Table 5.12 Steps of the MIUKA project pre-CBEA and CBEA phases, Kirinyaga

Steps	Pre-CBEA phase	Timeline	CBEA phase	Timeline
1st	Introductory workshop personal introduction, introduction to CBEA, potential group activities, participation/decision-making rules, etc.).	6th March 2019	Scoping (impact assessment)	20th March 2019
2nd	Visioning exercise (future expectations from the proposed project) and defining sustainability	12th March 2019	Scoping mitigation measures	26th March 2019
3rd	-		The environmental management plan	2nd April 2019

Once the MIUKA management committee and EIA expert agreed on the proposed next generation CBEA process and its duration, the management committee took the responsibility of informing the community members about the first CBEA workshop. The committee members also assisted me in sorting out logistics. Like GAKAKI, MIUKA committee members used several communication platforms, such as in various churches and at MIUKA project meetings to share the information on the first CBEA workshop. The management committee decided the time and venue of the first workshop and took responsibility for the formalities regarding seeking permission from the local Assistant Chief. In the meantime, I had moved to the community to stay at the home of one of the members. After meeting a few people, I hired a research assistant who was from the community.

5.3.2.1 Pre-CBEA phase

I conducted the pre-CBEA activities in Kirinyaga to comprehend the local context, local needs and priorities and to build rapport with the local people. The pre-CBEA activities were designed to communicate the purpose of the CBEA, to establish rapport with the members, and to build their capacity while setting the groundwork for the CBEA phase. Unlike GAKAKI CBEA, the MIUKA pre-CBEA activities were confined to two workshops to meet the needs of the local assessment timeline.

1st workshop: Introduction

The first workshop started with a prayer followed by a brief introduction by the chairman of MIUKA. The discussion in the workshop was translated and interpreted by the MIUKA chairman with input from the research assistant. The following table describes the activities that were conducted during the introductory workshop. Forty-three participants including the MIUKA management committee, attended the workshop.

Table 5.13 Summary of the first workshop activities in the MIUKA CBEA, Kirinyaga

Activities – Planned	Activities – Conducted	Description of activities	Explanation
Introductory workshop	Personal introductions.	I shared some background information and explained the purpose of my visit.	
Introduction to CBEA	Introduction to CBEA.	I explained the basic concept and relevance of EIA, as well as the CBEA process and stages.	I introduced the EIA concept with some examples and shared the incident of the Solai dam, which killed approximately 50 people when it collapsed.
Group formation and selection of group leaders	Group formation and selection of group leaders.	Participants formed groups according to their preference and selected group leaders.	
Understanding the local environment	Understanding the local environment.	Participants described the local environment and their livelihood/major source of income.	The EIA expert had already done the screening. Hence, I moved some of the screening activities to the pre-CBEA phase.
Identification of local issues and potential solutions	Identification of local issues and exploration of various alternatives/ potential solutions.	I used the nominal group technique to help participants identify their issues and brainstorm various solutions.	The EIA expert had already done the screening. Hence, I moved some of the screening activities to the pre-CBEA phase.
Participatory mapping	Participatory mapping.	Participants provided input in the mapping exercise.	I requested the MIUKA management committee members to take the lead in

Activities – Planned	Activities – Conducted	Description of activities	Explanation
			drawing a map of the proposed project.

The introductory meeting was very useful for all the participants, especially the community members, to get to know each other. Participants learned about the legislative requirements of EIA in Kenya, the relevance of CBEA, and how the entire process was designed to facilitate their learning so that they can actively participate and contribute to decision making. I explained the decision-making criteria that the participants of Murang'a had used for their CBEA. Participants in Kirinyaga agreed to consensual decision making and justifications for each decision. Various groups were formed, and several group leaders were selected by their fellow members (Figure 5.8a). Unlike Murang'a, the women in Kirinyaga were not comfortable to participate in groups with men, hence we had men's and women's groups but not mixed groups.

Participants also described their local environment, including the socioeconomic environment. All the participants in the workshop identified access to irrigation water as their main concern. The members of the women's group shared that access to water both for domestic and irrigation purposes was an issue for them. Participants suggested the construction of the proposed water intake, boreholes, and rainwater harvesting as potential solutions to this problem. However, after a cost-benefit analysis, the construction of the water intake was considered the best available option for the local context.

Participants produced a map from the mapping exercise that showed the proposed project site along with possible pipeline connections. The management committee took the lead to explain the map to the remaining participants (Figure 5.8b). Before the concluding prayer, participants decided the day and suitable time for the following workshop. All the participants agreed to commit three hours per week to the CBEA workshops and to meet at the same location for all the subsequent workshops, due to its central location and being the best available public place to hold such type of events.

Figure 5.8 a. Women's groups **b.** Participatory mapping exercise

2nd workshop: Defining sustainability and identifying ecosystem components

The second workshop was a challenging one as we had 137 participants. The unexpected increase in the number of participants was mainly due to the overlap of this workshop with MIUKA's monthly meeting, as well as the spread of information about the CBEA through word of mouth. The MIUKA management committee helped organise and communicate with the participants. The research assistant registered all the participants. Table 5.14 shares the activities that were conducted in the workshop.

Table 5.14 Summary of the second workshop activities in the MIUKA CBEA, Kirinyaga

Activities – Planned	Activities – Conducted	Description of activities	Explanation
Visioning exercise	Visioning exercise	I used the nominal group technique and participants, in groups, shared their aspirations for the project.	
Identification of the most valued ecosystem components	Identification of the most valued ecosystem components	Participants, in groups, identified their most valued ecosystem component from each category (environmental, social, and economic).	

Defining sustainability	Defining sustainability	Participants discussed and chose their criteria of sustainability from the generic criteria.	I encouraged all the groups to choose one element from the generic criteria due to limited time available.

Participants shared their future aspirations related to the proposed project as part of the visioning exercise (see Table 5.14). Table 5.14 also shares the participants' most valued ecosystem components, which were chosen and accepted through group activities. The women's group identified water as their life, and hence chose it as their most valued component from the environmental category. Seven out of thirteen groups chose 'resource maintenance and efficiency' as their top local sustainability criteria. Kikuyu women in this area largely bear the burden of irrigation for subsistence farming and kitchen gardens, and the women's groups prioritised this sustainability criterion in relation to water, their most valued environmental component. Four groups chose 'intergenerational equity' as their priority, and this was the second most preferred criterion. After an open discourse, participants agreed to include these two (intergenerational equity, and resource maintenance and efficiency) as part of their sustainability criteria (Table 5.15).

Finally, the workshop ended once the decision on the date of the following workshop was made.

Table 5.15 Outcomes of the second work shop in the MIUKA CBEA, Kirinyaga

Activities	**Outcomes**	**Explanation**
Visioning exercise	Continuous assess to water, food security, better employment opportunities, increase in farming activities, and improved standard of living	These aspirations regarding the proposed project were envisioned by the participants for their future.
Identification of the most valued ecosystem components	Water (environmental) Health (Social) Livelihood (economic)	Water was undoubtedly the most preferred environmental component for all. However, for the social category some groups debated between health and education.
Sustainability criteria	#4 Intergenerational equity	

	#5 Resource maintenance and efficiency	

5.3.2.2 CBEA phase

Unlike in Murang'a, the CBEA phase in Kirinyaga did not start with screening. The EIA expert had already conducted the screening prior to my association with this project. Hence, I was instructed to start the main assessment with scoping. However, some of the screening activities, such as agreeing to conduct the assessment for sustainability and discussion of the local environment, were included in the pre-CBEA phase.

3rd workshop: Scoping (impact assessment)

Scoping started with 68 participants registered for this workshop. At the beginning of the workshop, participants were encouraged to share what they had learned from the previous workshop. As it was a challenge for many participants, I encouraged 20 participants, who were literate and had understood some of the concepts, to volunteer for filling out forms required by NEMA. Those 20 volunteers agreed to spare some extra time and effort in a follow-up meeting to learn about various important concepts in order to respond better to the questionnaires. The MIUKA committee members facilitated the volunteer selection process. The names and contact numbers of those 20 volunteers were noted by the secretary of MIUKA as well as the research assistant.

Once the volunteer selection process was over, the workshop continued with the impact assessment activity. Table 5.16 describes the activities conducted during the impact assessment exercise.

Table 5.16 Scoping activities (impact assessment) in the MIUKA CBEA, Kirinyaga

Activities – Planned	Activities – Conducted	Description of activities	Explanation
Project description	Project description	The chairman shared the purpose, objectives, financial status, and other information of the proposed project.	
Information session on Kenyan EIA	Information session on Kenyan EIA	I briefly shared the legislative requirements of EIA in Kenya.	This information session was planned to be conducted by the EIA expert, but in her absence, I shared

Activities – Planned	Activities – Conducted	Description of activities	Explanation
			the information with the participants.
Impact assessment exercise	Impact assessment exercise	I used the nominal group technique to engage with the participants in examining the potential project impacts on the selected most valued ecosystem components.	Participants used the sustainability lens, especially intergenerational equity, to examine the potential project impacts.
Identification of additional impacts from the sustainability lens (resource maintenance and efficiency)	Identification of additional impacts from the sustainability lens.	Participants, in groups, examined some other (indirect) impacts.	Participants used the sustainability lens, especially resource maintenance and efficiency, to examine some other impacts.

Participants learned details about the proposed project. This session was interactive, where some participants asked questions related to the current status and funding arrangement and the chairman patiently addressed their queries. Participants came to know about the legislative aspects of EIA in Kenya and its relevance. Additionally, I shared some information about the WRA and the existing rules regarding the use of water from any water source. Participants learned that they are not allowed to pump water to irrigate their vast agricultural land. The participants in the workshop engaged in group activities to examine various project impacts, which are summarised below (Table 5.17).

Table 5.17 Outcomes of scoping (impact assessment) in the MIUKA CBEA, Kirinyaga

Impacts	Environmental Component Water	
	Current generation	**Future generation**
Positive	Access to sufficient irrigation water as well as even distribution of water. This impact was considered high and long term.	Future generations will have access to irrigation water.

Negative	Misuse/ Mismanagement of water This impact was considered low and short term.	-

Impacts	**Social component** **Health**	
	Current generation	**Future generation**
Positive	Improved health conditions because of sufficient and nutritious food. This impact was considered high and long term.	Healthy and strong future generation.
Negative	Increasing health risk due to excessive use of chemical fertilisers and pesticides in farming. Risk of malaria outbreak due to breeding of mosquitoes in stagnant water in farm/kitchen gardens. This impact was considered high and long term.	Potential health risks/ conditions for future generations.

Impacts	**Economic component** **Income/ Livelihoods**	
	Current generation	**Future generation**
Positive	Improved standard of living because of employment generation and increased income. This impact was considered high and long term.	Increase in overall wellbeing of the future generation through access to good health, education, and living standard.
Negative	Increased insecurity and increases in the crime rate and the risk of adultery due to inbound migration. This impact was considered low and short term.	May have some adverse impacts on future generations.

Sustainability lens	Indirect impacts	Explanation
Resource maintenance and efficiency	Lack of access to sufficient irrigation water.	Due to climate change and illegal pumping of water by non-members.
	Contamination of water.	Due to salinization.
	Waste of water.	Due to leakage/broken pipes.
	Siltation.	Due to increased concentration of sediments at the intake.

Transect walk to the proposed intake site

I went to the proposed project site with the MIUKA chairman, which was approximately eight km away from the regular meeting place. My committee member Dr. Spaling and local advisor Dr. Mutui joined us in the casual transect walk down to the valley to see the Nyamindi River and the proposed intake site (Figure 5.9). The entire team examined the riparian zone of the river. The purpose of the visit to the intake site was to get an overview of the surroundings of the proposed intake site and to understand the geography of the place in order to use the information/knowledge in the next CBEA workshop. Table 5.18 shares the topics discussed during the transect walk.

Table 5.18 Outcomes of transect walk in MIUKA CBEA, Kirinyaga

Figure 5.9 Transect walk to the Nyamindi river

Topics discussed	Explanation
River catchment area	Distance of farm fields from the riverbank
Water flow	The chairman of MIUKA explained that they could use a certain quantity of water without affecting people downstream.

4th workshop: Scoping (mitigation measures)

The workshop on mitigation measures was special due to the presence of Dr. Spaling, Dr. Mutui, and the EIA expert. The guests were welcomed with songs and dances performed by the workshop participants. Sixty-six participants attended the workshop. At the outset of the scoping exercise, two female participants shared the key findings of the previous workshops to refresh the memories of all the participants. Table 5.19 describes the activities that were conducted during this workshop.

Table 5.19 Scoping activities (mitigation) in the MIUKA CBEA, Kirinyaga

Activities – Planned	Activities – Conducted	Description of activities	Explanation
Mitigation measures	Mitigation measures	I used the nominal group technique to engage participants in discussion and deliberation with their fellow group members to identify and examine the best mitigation measures.	
Questionnaires	Questionnaires	The EIA expert distributed 20 questionnaires to the volunteers and explained the instructions (see Figure 5.10a).	Like in Murang'a, the questionnaires had questions on the potential project impacts and how the participants want to mitigate those impacts.

Participants developed suitable mitigation measures for the potential project impacts through discussions and deliberations. The 20 completed questionnaires were collected and handed over to the EIA expert. The mitigation measures developed in the workshop are described below.

Prevention of misuse/mismanagement of water

- Sensitise/ educate people on efficient use of water
- Inform the MIUKA management committee
- Set up bylaws for penalties
- Recruit of water inspectors

Prevention of health hazards due to excessive use of chemical fertilisers and pesticides

- Educate/sensitise people regarding the appropriate use of fertilisers and pesticides
- Practice of organic farming
- Use of composted manure
- Explore options for traditional ways of controlling pests

Prevention of malaria outbreak

- Maintain hygiene/cleanliness
- Empty/cover all water containers
- Use mosquito nets

Minimisation of insecurity due to inbound migration

- Community policing
- Know thy neighbour/tenants/new members in the community
- Fencing of household surroundings

Management of water crisis (climate change)

- Altering/rationing water supply
- Storage of water for emergencies
- Reduce farming during water crises
- Drip irrigation

Management of water crisis (illegal pumping from the river)

- Educate/spread awareness
- Report to WRA
- Perimeter fencing around the intake
- Recruit security guards

Minimisation of water wastage (broken pipes/leakages)

- Report to the plumber
- Pipeline patrols

Minimisation of water contamination (salinisation)

- Water testing
- Spread awareness regarding littering into the river

Minimisation of Siltation

- Periodic clearing of intake
- Wash out

Figure 5.10 a. EIA expert giving instructions **b.** The management plan in progress

Participants thanked me for all the efforts. I was christened with a Kikuyu name, *Wamai*, which means the reason or sources of water. Participants, especially the MIUKA management committee, thanked the guests for their participation and the guests also reciprocated their gratitude for the hospitality. The date for the next meeting was decided prior to the end of the workshop.

5th workshop: The environmental management plan

Developing the environment management plan was the last task of the next generation CBEA in Kirinyaga, and the workshop was attended by 54 participants. After the inaugural prayer, two youth (a male and a female) jointly shared the summary of the scoping exercise (both impacts and mitigation measures) from the flip chart.

As there was no group activity, all the participants were encouraged to participate. The planning was very interactive where a few participants challenged some of the solutions proposed by the management committee to the issues that had been identified in the scoping workshop (Figure 5.10b). Finally, after some negotiation and modifications, the management plan was developed and accepted by all the participants. The MIUKA management committee and community members agreed to mutually share the project-related responsibilities to ease the workload and increase efficiency.

Table 5.20 The MIUKA CBEA environmental management plan, Kirinyaga

Impacts	Mitigation measures	Monitoring indicators	Responsibility	Cost	Timeline
Misuse/ Mismanagement of water	Education and awareness regarding efficient use of water within the community Inform MIUKA management committee Set up bylaws for penalties Recruit water inspectors	Minute book Complaint/ suggestion book By-laws book Cashbook	MIUKA management committee Community members (who are part of the project) MIUKA management committee	From members' contributions	Six months from now
Health risks due to the use of excess fertilisers & pesticides	Education and awareness of the appropriate use of fertilisers & pesticides. Awareness of organic farming	Minute/ visitors book Minute book	MIUKA management committee	Members' contributions	Six months from now

Impacts	Mitigation measures	Monitoring indicators	Responsibility	Cost	Timeline
	Use of composted manure Exploration of traditional pest control methods	Minute book Minute book	Community members Community members Community members		
Risk of malaria outbreak	Maintain hygiene/ cleanliness Empty/cover all water containers Use of treated mosquito nets	Minute book	Community members	Community members	
Increased insecurity due to inbound migration	Community policing Know thy neighbour/ tenant/ new members of the community. Fencing of household surroundings Report anything suspicious to the community leaders	Minute book	Community members	Community members	
Lack of enough water (climate change)	Alteration/ rationing of water supply Storage of water for emergency Reduce farming activities	Minute book	MIUKA management committee Community members Community members		

Impacts	Mitigation measures	Monitoring indicators	Responsibility	Cost	Timeline
	Drip irrigation		Community members		
Lack of enough water (illegal pumping of water from the river)	Educate people about the WRA rules Build a perimeter fence around water intake Recruit security for water intake Report to WRA	 Cashbook Complaint box Minute book	MIUKA management committee MIUKA management committee MIUKA management committee MIUKA management committee	 Members' contributions Members' contributions	
Wastage of water (leakages/ broken pipes)	Report to the plumber/linesman Pipeline patrol Report to MIUKA management committee	Maintenance register Duty roster Complaint book	Community members MIUKA management committee Community members	Members' contributions	
Water contamination (Salinisation)	Water testing Sensitise people not to litter into the river	Report on water sampling/ testing	MIUKA management committee	Members' contributions	
Siltation	Periodic cleaning of the intake Wash out	Maintenance register	MIUKA management committee	Members' contributions	Every six months

Impacts	Mitigation measures	Monitoring indicators	Responsibility	Cost	Timeline
		Maintenance register	MIUKA management committee		
Construction (waste management)	Proper disposal of construction waste Monitoring of construction activities	Inspection book Inspection book	MIUKA management committee MIUKA management committee		During construction
Increased withdrawal of water from the upstream river (this issue was raised here for the first time)	Visiting/ monitoring of intake site Report to WRA		MIUKA management committee MIUKA management committee		

The management plan was designed as per the next generation CBEA guidelines. A copy of the management plan was given to the EIA expert for her reference in preparing the project report. I thanked the participants for their time, patience, cooperation, and eagerness to learn. We ended the meeting with a closing prayer. The community blessed me for guiding them successfully through the complex assessment process and for educating them about many new things.

Follow-up meeting

Unlike in GAKAKI CBEA, I conducted one follow-up meeting with selected volunteers in MIUKA CBEA. In the follow-up meeting, participants were reminded of the key findings from the previous workshops noted on the flip chart. It was an intimate and fruitful discussion, where participants were free to ask as many questions as they had, and I, along with the MIUKA chairman, addressed all the queries related to the proposed project. Participants were offered bread and soft drinks as a token of appreciation for their effort and time.

5.4 Chapter summary

The next generation CBEA frame was successfully tested at both case study sites, with some context-specific modifications. The similar socio-cultural backgrounds and commonalities between the two irrigation projects certainly helped in conducting the next generation CBEAs smoothly. The cooperation of the proponents (GAKAKI and MIUKA), EIA experts, and community members at both sites was a significant contributor to the success of the next generation CBEAs.

The GAKAKI small-scale irrigation project in Murang'a involved building a storage tank and adding pipelines to expand the existing irrigation network to serve its large number of beneficiaries. Getting EIA approval from NEMA was a priority for GAKAKI to access funding for the proposed project. The EIA expert attended a few workshops to educate participants mainly on the legislative and technical aspects of Kenyan EIA. The GAKAKI management committee helped to smoothly facilitate the next generation CBEA, which was conducted over a period of one month and included the pre-CBEA and CBEA phases.

The pre-CBEA phase primarily focused on rapport and trust-building, understanding the local environment and the socio-economic dynamics, capacity building of participants, and setting the groundwork for the CBEA, including the crucial activity of defining sustainability in the context of local needs and priorities. Participants were involved in many PRA activities, such as transect walks and workshops. All the activities conducted during this phase were open and interactive, where participants actively participated in the decision making.

The CBEA phase in Murang'a consisted of screening, scoping (impact assessment and mitigation measures), and developing the environmental management plan. Participants became aware of the project details, the legislative and technical aspects of Kenyan EIA, and various alternative options to the proposed project. at the screening stage. During the scoping exercise, participants examined the potential impacts of the proposed project on their most valued ecosystem components, i.e. water and soil, health, and livelihood, through a sustainability lens. The locally-defined sustainability lens included three key elements: intergenerational equity, avoiding balancing and pursuing mutually seeking benefits, and resource maintenance and efficiency. Participants explored various suitable measures for the identified negative impacts in the next workshop. Thirty questionnaires were filled out by the participants and handed over to the EIA expert to be included in the project report for NEMA. The last part of the next

generation CBEA concerned the environmental management plan where participants developed an adaptive management plan and the GAKAKI management committee and community members agreed to share the responsibilities according to their respective capacities.

The MIUKA irrigation project in Kirinyaga aimed to build a water intake on the River Nyamindi. The MIUKA project had a limited number of beneficiaries, and had already secured funding from a German developement bank. Hence, it was urgent for MIUKA to complete their EIA and get approval from NEMA. Unlike GAKAKI CBEA, I became involved in the assessment process after it had already started. The next generation CBEA in Kirinyaga was shorter than in Murang'a, due to the time constraint and approaching rainy season. Like Murang'a, the next generation CBEA in Kirinyaga included both the pre-CBEA and CBEA phases.

The pre-CBEA phase in Kirinyaga was vital for rapport and trust building, exploring the local environment and socioeconomic dynamics, and defining sustainability based on the local needs and priorities. Learning from Murang'a's experience, I encouraged the participants in Kirinyaga to select two elements from the generic criteria as part of the sustainability criteria used in the CBEA. As screening had already been conducted by the EIA expert, I chose to include some screening-related activities, such as discussing the local environment and exploring various project alternatives during the pre-CBEA phase in order to follow the next generation CBEA guidelines.

The CBEA phase included scoping (impact assessment and mitigation measures) and the environmental management plan. The management committee shared detailed information on the proposed project, and participants also learned some legislative and technical aspects of Kenyan EIA. Participants, in groups, used discussions and deliberations to examine the potential project impacts through the local-defined sustainability lens. Various mitigation measures for the potential negative impacts were then explored by the participants. Participants filled out 20 questionnaires, which were collected and handed over to the EIA expert for use in preparing the project report for NEMA. The environmental management plan was the last activity of the next generation CBEA, and the MIUKA management committee and community members jointly developed an adaptive management plan where they agreed to share project-related responsibilities as appropriate to their different capacities.

Participants from both sites chose criteria of sustainability that best suited their local needs and priorities, and participated meaningfully in all the CBEA workshops, where they learned new information and concepts and applied their learning to fulfill the requirement of the CBEAs. The environmental management plans that were developed included the proponents and community members from both sites agreeing to share the follow-up and monitoring responsibilities.

Chapter 6
Barriers and enablers

"The EIA was one of a kind experiences, which we have never had. It wouldn't be wrong to say that the EIA meetings were a unique experience in the entire Kirinyaga County we have ever attended. It was like we were living in darkness and now we've got the light of knowledge …" (MIUKA Group, April 2019).

6.1 Introduction

In this chapter I present the data related to lessons learned from the experience of the next generation CBEAs in Kenya. This chapter critically analyses data related to sustainability, meaningful public participation, and follow-up and monitoring. Analysis and discussion of the learning component, especially social learning pertinent to next generation CBEA, is presented in the following chapter.

The data present in this chapter is from the individual as well as group interviews I conducted and my field observation notes from both case study sites. I discuss the experience of the pre-CBEA phase largely from my field notes at the onset of the chapter. The next section describes the three of the four next generation CBEA components from both case study sites. Besides identifying elements that enabled or impeded the implementation of the next generation CBEAs, I also discuss some methodological challenges, which I experienced during the process. The last section discusses the CBEA participants' overall experience that emerged in the data.

6.2 The next generation CBEA

6.2.1 The pre-CBEA phase experience

The role of the pre-CBEA phase was indispensable to providing the opportunity for participants to get familiar with one another, for building rapport and trust, as well as for process objectives, such as introducing the researcher and assistant, the respective proponents, and the next generation CBEA process. Through this process, some barriers and enablers emerged. I have largely used my personal experience of facilitating these CBEAs and field observation notes in order to justify these two traits of the pre-CBEA phase.

Barriers

Some of the key challenges I confronted during the pre-CBEA phase were the frequent changes in the number of participants, sociocultural barriers, such as gender dynamics (in Kirinyaga) and youth participation (Murang'a), and the language issue.

In the beginning, the variation in the number of participants was a concern for me. It is important to have the right kind of participants who must willingly agree to spend time learning new things and building their capacity for effective decision making [Maynard & Jacobson, 2019; Kilemo et al., 2014]. The situation improved once I shared my concerns with the proponents (both GAKAKI and MIUKA) as well as with the community members during the CBEA workshops.

Initially, women's participation (Kirinyaga) at the pre-CBEA phase was a concern due to the patriarchal social norms and the ubiquitous presence of adult male members, many of who were respected elders in the CBEA workshops. I was informed by the proponents at both sites that events like EIA, which requires some scientific or technical information, are predominately perceived as men's domain in many rural areas. Therefore, some women, in the beginning, came to the CBEA workshops to represent their husbands or other male family members. Participant K1 from Kirinyaga informed that she came to represent her husband for the first time but she found the first workshop very informative and useful. Kikuyu women are responsible for fetching water for their domestic use as well as for kitchen gardens and some small-scale farming. Therefore, for effective decision making, as Sinclair and Diduck, [2017] and O'Faircheallaigh, [2010] suggest, it was important to have pluralistic and meaningful participation, which included marginalised groups, especially women.

The way the Western world perceives punctuality is quite different from what many rural Kenyans view. As described in Chapter 5, the initial workshops were delayed by an average of 30 minutes (especially in Murang'a). Participants from both sites described different experiences with the management of public forums, with some noting that people often have to wait for hours for a meeting to start, which is a waste of time for the working-class people. It was a major concern for me initially to accomplish all the objectives of each workshop within a limited time.

An understanding of the local language for a community-based project is an asset [Walker et al., 2016; Walker et al., 2014; Spaling et al., 2011]. Regardless of the available interpretation, the language was still a barrier that I experienced during the facilitation of the CBEAs, which limited my ability to engage with women and elderly participants on several occasions. Without interpretation, it would have not been possible to implement the next generation CBEAs, which had the foundation on community participation.

Enablers

Various factors contributed to the smooth functioning of the pre-CBEA workshops at both case study sites. Spending time in the community and interacting with the locals helped me build initial rapport and trust. The engagement with the participants during scheduled pre-CBEA workshops and other occasions laid the foundation for strong bonding and helped me develop a better understanding of the local context. Participants informed that the accommodating and welcoming environment in the CBEA workshops gradually attracted more participants, and encouraged them to remain consistent. I also found that being respectful of participants' responses and giving priority attention to the local context helped bridge any initial barriers and mistrust. The members of the group MG5 from Murang'a reported, "This is the first time we had the EIA experience or experience of this kind of meeting. Your approach and the way you engaged with us and your presence in the community helped the community…". Meticulous planning for each day's events helped with managing the crowd, especially in Kirinyaga. My consistency and punctuality encouraged many participants to slowly adapt to the new notion of punctuality (different from the local standard), which helped me manage the time more efficiently.

6.2.2 The components of next generation CBEA

6.2.2.1 Sustainability

Sustainability was one of the four selected components that were successfully integrated into the next generation CBEAs (see sections 5.2.2.1 and 5.3.2.1 in Chapter 5). Trying to action the concept of sustainability through CBEAs was new to most of the participants. For example, participant M2 from Murang'a said, "I found 'Gutoria muno' (Kikuyu term for sustainability) was new and difficult to understand. I had to think hard …". Table 6.1 lists the barriers to and enablers found in the data related to the application of sustainability in the next generation CBEA context.

Table 6.1 Barriers to and enablers for sustainability

	Barriers	**Enablers**
Key attributes of sustainability in next generation CBEA	Generic criteria as a complete package	Prioritisation of the local context
		Consideration of project Alternatives
		(Avoidance of) Trade-offs
		Use of Interconnectedness

Barriers

The establishment and actioning of a set of generic criteria for considering the sustainability of the projects were substantially challenging. Gaudreau and Gibson [2010] have also described their practical experience of implementing the generic criteria of sustainability assessment as daunting. Participant M18 from Murang'a informed, "I found defining sustainability was completely new to us. We had no [idea] about the points we discussed during the workshop".

Defining the local criteria for sustainability was time consuming and a challenging task. The legislative requirement for EIA in Kenya, as well as time and resource constraints, restricted the ability of the generic criteria as a comprehensive package. Also, a lack of prior experience with and understanding of the concept of sustainability from a Western perspective, as is applied in the CBEA context, added another layer of challenge, which Gaudreau and Gibson [2015] also experienced in Senegal.

The implication of these difficulties to use the sustainability component as a comprehensive package challenged my vision of an ideal next generation CBEA. The inability to integrate all the elements from the generic criteria directly into the locally defined sustainability criteria required an extra effort to re-strategise the subsequent workshops in order to accommodate the remaining elements.

Enablers

The enablers that were successfully integrated into the sustainability component during the implementation of the next generation CBEAs are prioritisation of the local context, consideration of project alternatives, (avoidance of) trade-offs, and use of interconnectedness. Each of these enablers contributed to robust sustainability in the CBEAs.

Advocates of sustainability in EIA strongly emphasise the consideration of context-specific requirements [e.g., Gibson, 2017; Sala et al., 2015; Bond et al., 2012]. Local needs at both sites were given the utmost priority. For example, participants discussed and identified their most valuable ecosystem components. The discussion on local priorities and the ecosystem components that were important to the CBEA participants encouraged them to get involved in the CBEAs. Participant M14 from Murang'a stated, "Your examples were related to the local context. Many of us have not been outside this area and therefore, when you used the local examples, which we could easily relate, it was easy for most of us to understand". Thus, consideration of the local context helped people connect with the CBEAs as well as contributed to their understanding of various complex concepts besides meeting the next generation criteria for sustainability.

Consideration of various project alternatives to and means, one of the indispensable steps of sustainability assessment [Gibson, 2017; Pope & Petrova, 2017], strengthened the sustainability component in the CBEAs (see Screening in section 5.2.2.2 and introduction in section 5.3.2.1 in Chapter 5). Participants at both sites were meaningfully engaged with the EIA teams in the joint exploration of various alternatives to their proposed projects. Participants were able to think and compare various alternatives from multiple perspectives (socioeconomic and environmental), which helped them understand the significance of their respective projects, and also make rational decisions during the assessment.

Discouragement of trade-offs and an open and transparent process if trade-offs are to be made were the two important criteria for trade-offs as part of the sustainability component. The concept of trade-off was well integrated into decision making during the CBEA phase. For example, the screening and scoping stages emphasised the avoidance of any major alteration of the landscape, including the impasse of water channels or removal of some old indigenous trees (see sections 5.2.2.2 and 5.3.2.2 in Chapter 5). The women's group KM2 in Kirinyaga shared, "Nothing can substitute the local environment we have. Even if we get millions of shillings, how long will it last? Is it worth it even? We are not in favour of trade-offs". Due to the close association of the participants to their local environment, integrating the trade-off criteria into the CBEAs were not challenging and participants rather appreciated the effort.

Gibson [2013, 2017], a strong advocate of the concept of interconnectedness, stresses the relationships between the biophysical and socio-economic environment. The interconnectedness

that underscores the relationships between active human and biophysical components was deeply integrated into the CBEA phase at both sites (see sections 5.2.2.2 and 5.3.2.2 in Chapter 5). The participants from the group MG2 in Murang'a stated, "We think all the three elements (environmental, social, and economic) are vital and interrelated. A good environment makes us healthy and if we are healthy, we can earn our livelihood". Participants were satisfied with the decision making as they did not have to compromise one element for another.

6.2.2.2 Meaningful public participation

In chapter 4, I described the ten components of meaningful public participation in EIA, which I incorporated in the next generation CBEA frame for my work. Table 6.2 describes the barriers and enablers to public participation during the CBEAs in Kenya.

Table 6.2 Barriers to and enablers for meaningful public participation

Barriers	Enablers
Adequate and accessible information	Fair notice and suitable time (for the majority of participants)
	Early and ongoing participation
	Openness and Transparency
	Inclusive and adequate representation
	Deliberation
	Capacity building
	Use of PRA tools to facilitate participation (including group activities)
	Follow-up meetings
	Learning oriented participation

Barriers

Access to adequate information is one of the requisite criteria of meaningful public participation, but as Omenge and Eshiamwata [2019], and Ngonge [2015] observe regarding challenges to participation in Kenyan EIA, low literacy rates and providing information in local languages can be difficult to overcome. I confronted this problem at both of my study sites. It was an arduous task to interpret the technical information on EIA from NEMA's official website

into the local language, for example, it was challenging for me to explain the steps of EIA, such as screening, scoping, etc., and what each step includes. Participant M11 from Murang'a said, "I wish we had some literature in Kikuyu to refer to. I had difficulty in understanding some words ... I am not sure if there are such words in Kikuyu". The absence of any literature required an investment of extra time and effort from my side, which further slowed down the pace of the progress of the CBEAs. This challenge was consistent throughout the CBEAs but it was not a major obstacle that could have completely abstained from the CBEA process since the literacy rate was quite low at both sites.

Enablers

The enablers mentioned in Table 6.2 reinforced the public participation component in the next generation CBEAs. Respondent M13 from Murang'a stated, "Many community members if you noticed, came from the very first day and continued until the last workshop. So, I would say, most of them enjoyed the workshops, participating in various activities, and interacting with others".

Fair notice and suitable time were key to public participation in the next generation CBEAs. Participants were informed about the CBEAs two weeks before the introductory workshops, which was the responsibility of the respective proponents (GAKAKI and MIUKA management committees) at both sites. In each workshop I led, participants and the proponents would jointly decide a suitable day and time for the subsequent workshop. The CBEA workshops were flexible in order to fit the local context. Members of the group MG4 from Murang'a shared, "The time and venue of the workshops were fine. We were able to come in the afternoon after finishing our domestic chores…". Lots of early and targeted advertisements, the word of mouth, flexibility as well as coordination at the CBEA workshops contributed to strong public participation at both case study sites.

Early and ongoing participation is crucial to meaningful public participation [Sinclair et al., 2018; Gibson et al., 2015]. To ensure the best practices of meaningful participation, early and continuous participation was an essential condition for the next generation CBEAs at both sites. Participants were involved from the introductory workshop through the pre-CBEA and CBEA stages at both sites, which aligned with the aspects of meaningful public participation in the next generation context. Members of the youth group KM3 from Kirinyaga stated, "We have never had an experience of this level of engagement in any other meetings. In each workshop we were

continuously encouraged to share our ideas. It was a good experience". The implication of this early and ongoing participation encouraged many participants, especially the youth and women, to get involved in all the CBEA workshops, which strengthened the participation component.

Attempts to achieve openness and transparency critical to next generation EIA (Gibson et al., 2015), I found that conducting workshops in public spaces, being open to everyone, and being clear in communication contributed greatly to public participation at both sites. Participant M16 from Murang'a mentioned, "You were open and clear from the very first day. It was easy for us to understand the objectives and we were able to connect…". Another participant M7 from Murang'a said, "You were open and transparent and that's why we never felt that you had any hidden intentions. We felt free and did not have any fear". Thus, the implications of these attributes (openness and transparency) helped participants trust and connect with the process without any sense of fear, which boosted participation during the workshops.

Despite some existing dilemmas in the EIA literature regarding who could and who should participate in EIA [Glucker et al., 2013], the next generation CBEAs did not have any restriction in the CBEAs regarding participation. Inclusivity and adequate representation were the two other attributes that made the participation more meaningful. People from diverse socioeconomic backgrounds, who had bona fide interests in the respective projects, participated in the CBEAs. Participant M13 from Murang'a shared, "There are so many government-initiated projects. Communities rarely feel a stake in them and in case anything goes wrong, people would let the employees know to fix their (the proponents') projects. This was a unique approach where the participants felt welcomed and included because they participated in decision making".

Adequate representation was another important element of the CBEAs that contributed to meaningful public participation. Participant K2 from Kirinyaga stated, "Here in this EIA, women got an opportunity to share their views and asked questions, which is rare. In our Kikuyu culture, men mostly lead and women are not considered important to lead". Youth participation, however, was an issue in Murang'a, akin to what Spaling et al., [2011] experienced in East Africa during their CBEA. Figure 6.1 shows the diversity among participants from both sites, which not only contributed to meaningful participation but also the variety in opinions, especially the opinion of women who are largely responsible for resource (water) management, strengthened the CBEA decision-making process.

Figure 6.1 CBEA participants from Murang'a (left) and Kirinyaga (right).

Deliberation happens when people engage in the exchange of ideas, discussion, and argument that eventually lead to a change in point of view [Dryzek, 2000]. As initiated, I feel that the next generation CBEAs were platforms for participants to collaborate, to exchange ideas, to have opportunities to agree and disagree, and finally, to reach consensual decisions. Participant K8 from Kirinyaga explained, "Choosing the most important ecosystem components was a bit challenging as we had a lot of arguments during the discussion … Once everyone shared their ideas, we had discussions and debates before making final decisions through consensus. To find the best possible answer, we challenged each other and asked questions…". Participants of group MG4 from Murang'a shared, "We had several disagreements, debates, and discussions before coming to a conclusion. Each of us had to justify our points and no one felt upset because of the rejection of their points". The deliberative decision-making process during the workshops corroborates the active involvement of participants at both sites, which indicates robust participation during the CBEAs.

Citizen participation through capacity building acts as a catalyst for building social capital [Cuthill & Fien, 2005]. Being community-based, the next generation CBEAs emphasised building the capacity of the local participants at both sites and therefore, the role of the pre-CBEA phase was significant. Participants of group KM1 from Kirinyaga shared, "You did not give the questionnaires to a few of us, and neither you told us what we supposed to write. You worked with us and made sure that we understand what was going on and we were freed to use our mind to fill-up those forms". One of the EIA experts said, "My experience with this EIA was very different. We built the capacity of the community members before the actual EIA process started. The participants were so well prepared for the EIA and they even came up with their

solutions. The participants knew what they were doing". The building of civic capacity, also described by Gibson [2006a, 2006b, 2017] as one of the generic criteria for sustainability, is key to effective and collective decision making. Thus, the capacity building of participants enabled them to actively participate in the CBEA phase and to fill-up the questionnaires that were a Kenyan EIA to show as evidence of public participation.

The role of PRA is well recognised for its contribution to participation in EIA [Sandham et al., 2019; Walker et al., 2014]. I used some of the PRA tools, including participatory mapping, transect walks, group activities, and workshops, to facilitate participation during the CBEA workshops (See Figures 5.5 and 5.9 in Chapter 5). Participant K1 from Kirinyaga shared, "Group activities were useful, especially for women. Some could not speak in front of all but they were able to share their views within our group and that's how they contributed. We helped each other explaining certain things …, which improved our understanding". PRA activities provided a platform to all CBEA participants to break the initial ice, socialise, understand, and help each other, which ultimately led to robust participation.

The significance of follow-up meetings was also revealed in my findings. Participant M4 from Murang'a said, "These follow-up meetings were useful. We were caught up in many things and it was not easy to understand everything in one meeting. These follow-up meetings in small groups helped refresh our memories and understand better as we could ask as many questions as possible in a more relaxed environment". Meeting in a relatively informal setting with a limited number of participants was a win-win situation where participants had more time to ask questions and clarify their understanding. I was also able to better understand the social dynamics within communities as well as issues related to participation. These follow-up meetings were instrumental for some participants to catch up with the main next generation CBEA workshops that helped them participate in the subsequent workshops.

Learning-oriented participation is one of the robust forms of participation, which the next generation CBEAs had at both sites. The participants of the group KM1 from Kirinyaga reported, "We had very good participation within our group members. We discussed, we argued, and we learned a lot through our participation". The next generation CBEAs followed a civic approach, where people meaningfully engage in decision making and are not just passive listeners [Strasser et al., 2019; Sinclair & Diduck, 2017], which helped participants understand things better and learned from each other, thus, making it learning-oriented participation.

6.2.2.3. Follow-up and monitoring

Follow-up and monitoring in the next generation CBEAs employed a collaborative approach among stakeholders, where the emphasis was placed on the sharing of information and responsibilities to ensure that key sustainability issues were addressed to achieve positive outcomes (see section 2.4.1.3 in Chapter 2). Follow-up and monitoring were part of the environmental management plan (see the environmental management plan in sections 5.2.2.2 and 5.3.2.2 in Chapter 5). The four basic components, i.e., monitoring, response to findings, communicating those findings, and learning were incorporated into the environmental management plans. Table 6.3 provides an overview of the barriers and enablers to follow-up and monitoring observed in the next generation CBEAs.

Table 6.3 Barriers to and enablers for follow-up and monitoring

Barriers	Enablers
Capacity building	Open and transparent
Traditional knowledge	Collaborative approach
	Sharing of responsibilities
	Adaptive management practice (response to the findings)
	Communicating and learning

Barriers

Capacity building for community members through follow-up and monitoring training was disregarded as a viable option in Murang'a (and hence, I did not propose this to the CBEA participants in Kirinyaga). As participants volunteered to share the follow-up and monitoring responsibilities, it was challenging to allocate or impose a specific timeline. The GAKAKI management committee raised concerns regarding demanding more time from participants for capacity building. For example, follow-up and monitoring require certain kinds of knowledge and skills, and participants must be trained to observe certain things at regular intervals. Most CBEA participants in Murang'a already had a very demanding daily schedule, such as farming or wage work or taking care of family members, etc. and therefore, it was mutually decided by

the proponent (GAKAKI management committee) and the EIA team not to overwhelm the community members with any further training program.

Traditional or indigenous knowledge, which can increase the effectiveness of EIA follow-up [Pinto et al., 2019; Pinto-Guillaume, 2017; O'Faircheallaigh, 2007], was challenging to integrate into the follow-up and monitoring process during the development of the environmental management plans. One of the participants from Murang'a shared that many locals in that region lost their knowledge of the indigenous way of farming and controlling pests in the 1970s when the scientific and modern methods replaced the traditional methods. Indigenous or traditional knowledge could have increased the efficiency of local people in follow-up and monitoring while making them less dependent on the outside government agencies, such as the agriculture department, etc. besides satisfying the criteria for a robust follow-up process.

Enablers

Openness and transparency, which are also endorsed as core values in EIA follow-up [Pinto et al., 2019; Wessels et al., 2015], enabled the smooth development of the environmental management plans where participants were involved in planning for the follow-up and monitoring activities. Participant K6 from Kirinyaga shared, "It was nice to be part of the management plan as many things became clear. For example, as a community member initially, I struggled to understand the intent of the MIUKA group regarding follow-up and monitoring. But, because this process was open to all and they explained the reasons, it became clear". The transparency in the process helped participants understand the management plans at the respective sites and the intent of the proponents (both GAKAKI and MIUKA) better. Participants also shared their opinions and provided suggestions that helped design a better follow-up and monitoring plan.

A collaborative approach, which is critical to an effective follow-up and monitoring [McKay & Johnson, 2017; Devlin & Tubino, 2012], was adopted in the development of the environmental management plans where the proponents (GAKAKI and MIUKA) along with the CBEA participants and the EIA team jointly participated (Figure 6.2). The inclusion and participation of many knowledgeable participants were a valuable addition to the management plans. For example, participant M1 from Murang'a shared, "I learned about many new things including the talents and skills some people had in our community. We did not know until we all

participated in the management plan where someone suggested organic farming techniques, etc. I am satisfied with the overall experience". The inclusive and participatory environment created a conducive environment for participants where they contributed to planning for the follow-up and monitoring activities.

Sharing of follow-up and monitoring responsibilities was key to the next generation CBEAs, as also observed by McKay and Johnson, [2017], and Noble and Birk [2011]. The environmental management plans at both sites were designed such that the proponents and participants agreed to share responsibilities for monitoring of construction and post-construction follow-up at various capacities. The participants from the women's group KM2 at Kirinyaga stated, "It was important to share the responsibilities to make the project work efficient and faster. Being part of the community, we have realised our share of responsibilities". The mutual agreement of sharing of responsibilities between the proponents and participants helped design efficient environmental management plans at both sites.

Adaptive management plans, which are designed to accommodate future changes [Morrison-Saunders et al., 2014; Bjorkland, 2013; O'Faircheallaigh, 2007], were part of the next generation CBEAs. For example, periodic testing of water at both sites was an important follow-up activity where the proponents at both sites took responsibility. The proponents at both sides agreed to approach the relevant government departments (e.g., WRA or Agriculture Department) in the event of any issue, such as water or soil contamination, and also agreed to take necessary measures in case there is a need. The good integration of adaptiveness into the environmental management plans reinforced the follow-up and monitoring component in the next generation CBEAs.

Communicating the findings of various follow-up and monitoring activities, which is considered as one of the best EIA follow-up practices [Pinto et al., 2019; Jones & Fischer, 2016; Wessels et al., 2015], were part of the environmental management plans at both case study sites. Both proponents during the development of the management plans agreed to share the outcome of various tests (e.g., water, soil, etc.) with their respective community members and learn from the discussion. The integration of communication and learning elements through the sharing of information contributed to robust follow-up and monitoring plans at both sites.

Figure 6.2 Discussing the management plans in Murang'a (left) & Kirinyaga (right)

6.3 Participant and researcher experience with next generation CBEA

The next generation CBEAs was a unique experience for me as a researcher, for the participants as well as the EIA experts responsible for each project in Murang'a and Kirinyaga. Besides the barriers and enablers for each next generation component described above, there were certain additional elements, which made the next generation CBEAs unique.

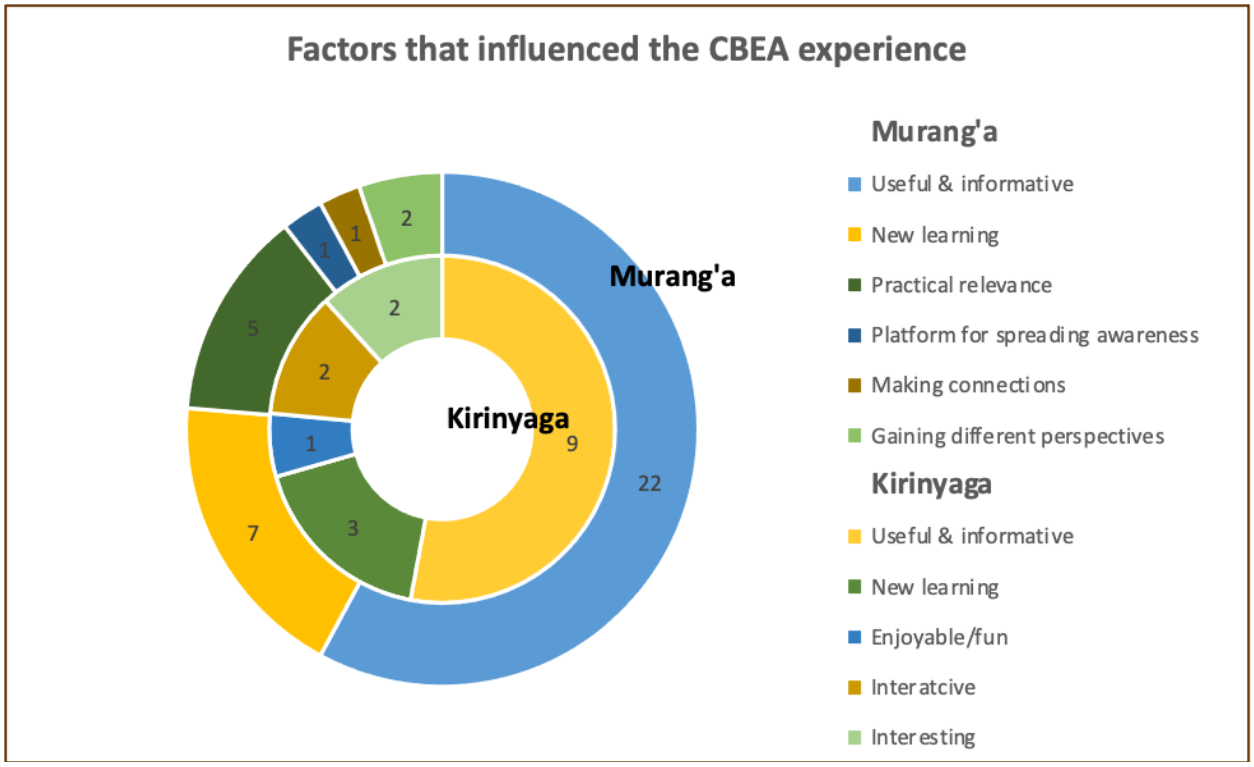
The steps of the main CBEA phase, especially the scoping stage, were challenging for many participants at both sites. Participants KM1 and KM2 from Kirinyaga stated, "We found the impact assessment exercise quite tough. We had never thought of negative impacts. We just thought we would get water once the intake is built". Many participants from Murang'a also had similar views about scoping. The participants from the group MG3 in Murang'a informed, "We already have some difficulties in finding negative impacts, but exploring various mitigation measures was even tougher". From my own experience, I could certainly notice the dilemma among participants during the scoping activities.

Besides some of these process-related challenges, many participants also shared their views on the overall experience of the next generation CBEAs. Participant M14 from Murang'a shared, "The way the assessment was conducted was distinct from the way it is done in Kenya. Had you followed the regular procedure, participants would not have learned anything and able to complete those NEMA forms". The participants of the group KM1 from Kirinyaga said, "The assessment was one of its kind. We have never experienced anything like this. It would not be

wrong to say that this was a unique meeting in the entire Kirinyaga County we have ever attended".

Figure 6.3 describes some of the elements that were shared by the participants during the interviews, which made their overall next generation CBEA experience positive. The inner-circle represents participants' views from Kirinyaga and the outer circle represents the views from Murang'a. A majority of participants from both sites found the next generation CBEAs useful and informative (i.e., 9 for Kirinyaga and 22 for Murang'a). Many participants from both sites informed that learning new things made their CBEA experience intellectually positive (i.e., 7 for Murang'a and 3 from Kirinyaga). Similarly, a single participant from Kirinyaga mentioned that the overall CBEA experience was fun besides useful and informative. Factors, such as making connections and gaining multiple perspectives were considered less important to the participants from Murang'a. All the elements described in Figure 6.3 imply that most participants at both sites had a positive experience with the next generation CBEAs.

Figure 6.3 Factors that influenced participants' experience of CBEA



6.4 Chapter summary

This chapter has discussed the various barriers and enablers that were experienced during the implementation of next generation CBEAs at both case study sites. The initial barriers such as fluctuation in participants numbers, women's participation, punctuality, and the lack of my ability to speak the local language were some of the major concerns to me. The barriers and enablers I faced during the facilitation of the pre-CBEA phase helped me understand the local dynamics better and revisit my strategies for the subsequent workshops.

Besides these initial barriers, factors, such as spending time in the community and interaction with community members, welcoming and flexible environment during the workshops, and my punctuality and consistency contributed to the smooth sailing of the pre-CBEA phase. The pre-CBEA phase experience taught me the significance of meticulous planning for each workshop that helped further facilitate the remaining workshops.

For the sustainability component, the main challenge was the integration of the generic criteria as a comprehensive package. Learning from this experience made me revisit the next generation CBEA frame and find ways to use the remaining elements of the generic criteria in order to meet the standard that I had initially aimed for. The factors that made the sustainability component advance were the prioritisation of the local needs, consideration of project alternatives, (avoidance) of trade-offs, and integration of interconnectedness. Participants were satisfied that they did not have to compromise one component for another.

Meaningful public participation occurred throughout the next generation CBEAs regardless of the unavailability of adequate and accessible information in the local language. Factors, such as fair notice and suitable time, openness and transparency, inclusive and adequate representation, deliberation, capacity building, use of PRA tools, follow-up meetings, and learning-oriented participation boosted the success of the participation component. Participants at both sites were satisfied with their participation in the next generation CBEAs.

Follow-up and monitoring were successfully integrated into the environmental management plans. Factors, such as openness and transparency, sharing of responsibilities, adaptive management practice, and communicating and learning reinforced the follow-up and monitoring component in the next generation CBEAs. Capacity building of participants and the integration of traditional knowledge could not be incorporated into the follow-up and monitoring

plan due to certain context-specific challenges. Despite these two barriers, participants were very much part of the follow-up and monitoring activities.

Regardless of some context-specific challenges, the above-mentioned three components were successfully integrated into the next generation CBEAs at both sites. Participants at both sites had a unique experience with these CBEAs. Sociocultural factors, such as illiteracy added additional challenges to the CBEAs. Nevertheless, participants were satisfied with their experience and the CBEAs were able to meet the next generation criteria as well as fulfilled the Kenyan legislative EIA requirements.

Chapter 7
The relationships between next generation CBEA and learning

"The EIA meetings were very useful. Besides learning so many new things, this process helped us clearing so many misunderstandings among us, especially with the GAKAKI management group…" (Group MG1, Murang'a, February 2019).

7.1 Introduction

In this chapter I discuss the relationships between next generation CBEA and learning. I begin the chapter by discussing how next generation CBEA provided a learning platform, which eventually helped the CBEA process. I discuss the key elements of the social learning process in the following section that were designed to be tested as part of the next generation CBEA frame (see section 4.4.4 in Chapter 4). I discuss learning outcomes as well as the social learning gaps identified in the literature (see section 2.4.1.4 in Chapter 2). I also examine the learning outcomes to identify if there is any transformative change. The analysis and discussion in this chapter are based on data generated through the individual and group interviews at Murang'a and Kirinyaga, as well as my field observation notes from both sites.

7.2 The relationships between next generation CBEA and learning

In Chapter 2 (see Table 2.2) I discussed what a learning-oriented next generation CBEA looks like, which was different from a conventional EIA. In a conventional EIA, learning among participants occurs with their involvement, which happens largely much later at the scoping phase [Sánchez & Mitchell, 2017], and Kenya is no different (see section 4.2 in Chapter 4). Sánchez and Mitchell [2017] encourage that EIA screening begins with an approach that is learning-oriented, the next generation CBEAs, on the other hand, adopted an learning-oriented approach from the pre-CBEA phase, prior to the outset of the actual assessment (Table 7.1). Table 7.1 shows how measures were taken prior to the onset of the main CBEA phase to integrate learning, which was consistently followed throughout the assessment process.

Table 7.1 Learning-oriented next generation CBEA

Steps	Learning-oriented EIA	Next generation CBEA
Pre-CBEA phase	- Not applicable	-Collaboration among various stakeholders -Early engagement of participants -Capacity building -Joint exploration of local needs and priorities -Collective decision on local sustainability objective
Screening	-Public and stakeholder participation in the identification and mapping of ecosystem services -Joint assessment of risks and opportunities -Early engagement of participants	-Meaningful participation of stakeholders including local communities in the identification of ecosystem services -Joint exploration of project alternatives from a sustainability lens
Scoping	-Stakeholder engagement in planning and designing (depending on the context) -Collaboration between environmental, social, and economic experts to avoid significant trade-offs -Development of mitigation measures by the incorporation of stakeholders' inputs	-Joint examination of potential project impacts from a sustainability lens -Joint development of mitigation measures
Follow-up & monitoring	-Adaptive management -Shared responsibility and participatory monitoring	-Joint development of adaptive environmental management plans

	-Long term and post project monitoring Sharing and reporting of findings from monitoring	- Collective sharing of follow-up and monitoring responsibilities -Collective agreement on long-term follow-up and sharing of monitoring results and mutual learning

The pre-CBEA phase

One of the prerequisites for the next generation CBEAs to be practised at two case study sites was a collaboration among several key actors that included academics, government institutions (e.g., NEMA, WRA, etc.), EIA experts, the proponents, and community members. Each actor played a specific role to make the CBEAs happen. My role as a researcher was crucial to establish the initial contacts and setting the ground for a collaborative CBEA. NEMA provided the initial contacts and educated me about the broader EIA process in Kenya. The EIA experts made sure that the CBEAs must meet the legislative requirements as per the Kenyan standard, and the proponents and community members agreed to collaborate. Thus, collaboration was inevitable for the EIA team, the proponents, and community members in comprehending and executing the CBEAs while ensuring that legislative requirements are met. Due to the participatory nature of next generation CBEA, the proponents, and the community members along with the EIA team were actively involved from the beginning, which helped the smooth functioning of the assessments at both sites (see section 7.3 on meaningful participation below).

Capacity building with participants during the pre-CBEA phase was essential where participants learned various concepts, such as EIA, sustainability, etc., which helped them make better decisions (see section 6.2.2.2 in Chapter 6). The pre-CBEA phase also provided a platform for the proponents and community members to work collectively towards understanding various environmental and socioeconomic problems and setting their priorities. For example, the collective effort on defining sustainability did contribute to the understanding of local needs and priorities (see section 6.2.2.1 in Chapter 6).

Besides setting the ground for the CBEA, the pre-CBEA phase was also crucial that laid the foundation for the social learning process. For example, some of the very basic attributes of CBEA, such as participation, collaboration, capacity building, etc., which are also integral to the

social learning process, helped accelerate learning among participants due to the compatibility between next generation CBEA and social learning.

The CBEA phase

Unlike the pre-CBEA phase, where the relationships between next generation CBEA and learning was mostly unidirectional since community members focussed on learning and building their capacity, in the CBEA phase, on the other hand, the relationships between these two became multidirectional where CBEA participants not only continued to learn but also applied their learning to further the environmental assessment, which contributed to social learning.

The CBEA phase started with screening where participants in a collaborative way identified their most valued ecosystem components on which the proposed projects at the respective sites might have some impact. The joint exploration of project alternatives made participants think beyond economic cost and consider the environmental and socioeconomic implications of each alternative, which was an example of learning at the same time the application of knowledge, which ensured the next generation qualities as well helped further the assessment. In the scoping stage participants applied their knowledge in examining various potential impacts on their most valued ecosystem components and in developing mitigation measures for the identified adverse impacts. This stage was crucial for all the participants where learning and application of knowledge simultaneously happened. The joint development of the management plans provided an opportunity to engage actively in designing the plan, which was itself a change in the governance structure where the proponents and community members agreed to share the follow-up and monitoring responsibilities. The management plans were flexible to accommodate any future change and both parties at the respective sites agreed for a long-term follow-up (see section 6.2.2.3 in Chapter 6).

Table 7.1 explains the symbiotic relationships between next generation CBEA and learning where both elements perfectly complemented each other. The next generation CBEAs provided a platform where learning and the application of knowledge happened simultaneously.

7.3 Social learning

The process

Rodriguez & Vergara-Tenorio [2007] describe social learning as a long-term process, where emphasis is on the process of people's learning through interactions, negotiations, conflict resolutions, etc. and transmitting knowledge to their peers and future generations. In order to

facilitate social learning for an impactful outcome, I aimed to integrate nine elements, such as effective communication, collaboration, understanding the local context, etc. into the social learning process (see section 4.4.4 in Chapter 4). Table 7.2 summarises the barriers and enablers that were experienced during the social learning process.

Table 7.2 Barriers to and enablers for learning

Barriers	Enablers
Field visits	Effective communication
	Collaboration
	Understanding of the local context
	Conducive learning environment
	Meaningful participation
	Critical reflection and thinking
	Use of PRA tools
	Follow-up discussions

Barriers

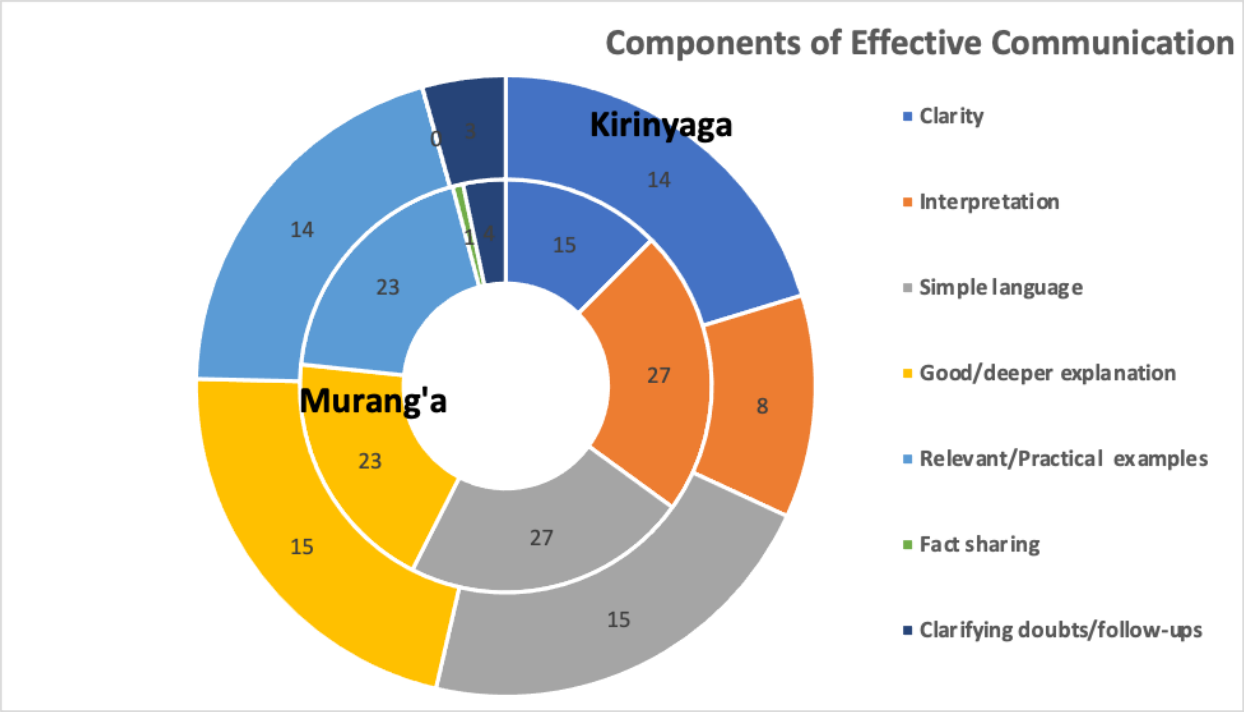
Site visits to a similar project site and interaction with people from the project site, which could promote adult learning [Briseño-Garzón et al., 2007], was challenging, especially for the participants at Kirinyaga due to logistic reasons. Participants from Murang'a had already an added advantage of having the existing storage tank in the community, and that is why most participants were familiar with the potential project benefits. The lack of exposure to a similar project site certainly made the CBEA workshops at Kirinyaga a little challenging as many participants had difficulty in visualising the potential project-related impacts and potential benefits. The CBEA phase, especially the scoping stage, at Kirinyaga required an extra effort from my side to stimulate discussion on potential project impacts and mitigation measures associated with impacts.

Enablers

Effective communication that includes dialogue, open and transparent communication, sharing of ideas, etc., which are repeatedly emphasised and endorsed [Sinclair et al., 2017; Romina, 2014; Pahl-Wostl, 2006; Schusler et al., 2003], were well integrated into the next generation CBEA process at both sites to facilitate learning. As communication is an important aspect of learning, I made sure to arrange onsite interpretation that included both translation and explication of various new and complex concepts, post-workshop follow-up meetings (for better understanding), and the minimal use of technical words and jargon in my explanation during the CBEA workshops.

Figure 7.1 shows the elements of effective communication that triggered learning among participants, which emerged in the data from both sites. The outer circle represents the views of the MIUKA CBEA participants from Kirinyaga and the inner circle represents the GAKAKI CBEA participants' opinions from Murang'a. Participants from Murang'a shared that interpretation (23%), use of simple language (23%), good explanation (19%), and relevant and practical examples (19%) helped them understand and learn. Participant M11 from Murang'a said, "You explained well and gave some practical examples, the demonstration where you drank the entire bottle of water at a time to make us realise the importance of future generation helped us understand the concept easily". While elements, such as simple language and good explanation (both 22%) helped the MIUKA CBEA participants understand and learn better. A female participant from Kirinyaga K1 noted, "In each meeting, we briefly discussed the learnings from the last meeting. So, the quick reminder was very useful for most of us".

Figure 7.1: Elements of effective communication



Effective communication, which included all the elements shown in Figure 7.1, certainly contributed to the two-way communication between the EIA team, the proponents (i.e. GAKAKI and MIUKA), and participants understanding of the complex process. Communication was crucial for the CBEA participants at both sites to learn from their experience as well as enabled them to make informed decisions.

Collaboration is key to social learning, which represents a diverse spectrum of interests, knowledge, and expertise at vertical (between different hierarchical levels) and horizontal (mostly among peers at same level) levels [Eriksson et al., 2019; Suškevičs et al., 2018; Eames, 2005]. Collaboration was crucial to the learning process in the next generation CBEAs. The implementation of the next generation CBEAs at both sites was a collaboration between academics (from Canada and Kenya), government departments (e.g., NEMA, WRA, etc.), EIA experts, the proponents (GAKAKI and MIUKA), and community members from Murang'a and Kirinyaga. Prior to the beginning of the CBEAs, I had an agreement with the proponents and the EIA experts at the respective sites to make the assessment collaborative where community members must participate in the decision making. I continuously received inputs from my committee members during the execution of the CBEAs. Occasional inputs from NEMA as well as WRA certainly helped clarify some legislative challenges. In describing normal procedures,

one of the EIA experts reported, “We do not have that much time and resources to engage with different stakeholders, not at the county level. It is mostly the experts who do the work and there is hardly any collaboration among multiple stakeholders. This EIA was completely a unique experience”. Similarly, the participants of group KM1 in Kirinyaga shared, “This EIA was a unique experience for all of us as we participated in the process. We were able to share our views and participate in decision making”. The multi-level collaboration helped the CBEA participants learn multiple things that benefitted the environmental assessment at both sites.

Since learning to manage natural resources must include the identification of local needs and priorities as well as an understanding of the local context [Medema et al., 2014; Measham & Baker, 2005; Schusler et al., 2003], therefore, the next generation CBEAs at both sites ensured that local needs and prioritises are given utmost importance. As identified as one of the limitations in the social learning literature (see section 2.4.1.4 in Chapter 2), I made an effort to integrate this element of learning as best as possible. For example, all the CBEA participants, including the proponents, community members, and the EIA team learned about the potential project impacts on the valued ecosystem components, which were crucial to the local communities at the respective sites.

Staying in the communities myself and hiring research assistants helped me understand the social and environmental dynamics at both sites. Informal interactions with the hosts and their family members, as well as random exploration walks within those communities contributed to my understanding of the local context. I then used the knowledge I gained to share my notions of the local context, which acted as the seeds of discussion among participants in enhancing their understanding of the local context. For example, identification of the most valued ecosystem components that were important to the local communities as well as defining sustainability in local terms were part of the process helped participants relate with their environment easily and learn from those discussions. Participant M14 from Murang’a noted, “The examples you shared with us were context-specific. We could relate with those, and hence it was easy for us to understand. We learned more about our environment”. An increased understanding of the local needs and priorities and the socio-economic dynamics helped me facilitate the CBEAs better where each of us learned from the experience. Participants from both sites were able to use their learning at various capacities, for example, the understanding of local

context helped them suggesting mitigation measures during the scoping activity that were suitable to that particular context.

I found some local sociocultural attributes that created barriers to social learning. For example, youth participation in the GAKAKI CBEA was quite challenging due to the perception of some adult members that youth are not mature enough to make critical decisions (see section 6.2.2.2 in Chapter 6). The existing stereotypical hierarchy followed in the local culture was discriminatory towards youth and thus created hurdles for the youth to be part of the CBEA decision making and learn from it. This experience helped me to take some extra measures to address the issue of youth participation during my second CBEA case study in MIUKA (see section 5.3.2 in Chapter 5). In the MIUKA CBEA, I found that men were dominating discussions in the initial workshops, which left very little space for women to engage actively. The power profile I undertook helped me understand the local context and adopt certain measures as the CBEA continued to engender space for the active engagement of all (see section 5.3.2 in Chapter 5). Despite these efforts, context specific sociocultural attributes can hinder social learning process, on the other hand, an understanding of local context can help adopt alternative measures, such as formation of separate groups and collection of opinions of each group, can enable social learning.

The next generation CBEAs were designed to make the environment conducive to learning, which is also known as 'ideal conditions' [Sims, 2012; Sinclair et al., 2008; Mezirow, 1997] or 'pre-conditions' [Cundill, 2010; Van Bommel et al., 2009]. The conditions that were repeatedly projected in the data collected from both sites includes an inclusive, open, and transparent process; an informal, comfortable, and welcoming environment; freedom of expression; respectful interaction, non-authoritarian orientation; familiar surroundings; and the appropriate timing and short duration of each workshop. In the introduction workshop I discussed some of these conditions, such as respectful interaction, freedom of expression, etc. with the participants at both sides to make them comfortable and be respectful towards each other's opinions. Participant M7 from Murang'a reported, "In these EIA meetings, we had the freedom to express our views and ask questions, unlike other meetings. We were not chosen to speak based on our socioeconomic status or physical look. We're not discriminated against because of our background and were treated equally. It was such a fear-free and welcoming environment". These ideal conditions helped participants understand the gravity of the

assessment process and learn new things. The comfortable CBEA environment also made the participants at both sites challenge and understand each other without feeling bitter.

Meaningful participation (see section 6.2.2.2 in Chapter 6), where individuals interact and collaborate to resolve common issues and take collective actions regarding natural resource management through joint decisions, is recognised as one of the key pillars of social learning [Medema et al., 2014; Muro & Jeffrey, 2008; Keen et al., 2005; Keen & Mahanty, 2005]. This was crucial to learning in the next generation CBEAs. Participant K4 from Kirinyaga said, "In many meetings, we rarely have discussions, where we only take notes. There is limited opportunity to ask questions or clarify doubts or have interactions among the participants, especially among women. In this EIA, we interacted and discussed different concerns and we learned a lot from each other". As the sharing of alternative views, ideas, values, and knowledge are integral to social learning [Ernst, 2019], I discussed the potential format of participation in the introduction workshops that must include alternate views and ideas of participants from the diverse socioeconomic background. The face-to-face dialogue format, which is recommended as an effective tool for social learning [Muro & Jeffery, 2012], was adopted during the CBEA workshops to encourage interaction among participants. Participants at both sites were benefitted from the meaningful participation that helped facilitate peer learning and make better decisions.

Reflection and critical thinking are crucial to social learning, which is an iterative process where participants share and exchange the views that made them expose to a range of ideas and reflect on those [Cundill & Rodela, 2012; Keen et al., 2005], and thus, were integrated to the next generation CBEAs. During the CBEA workshops, participants were asked questions and were encouraged in break out group sessions to find solutions. The participants from the youth group KM3 in Kirinyaga reported, "In the EIA meetings, you asked questions, provided the time to discuss, and present our views in front of all. Each group including the women's group, groups with elderly people, and some other groups shared their views, which does not happen in other meetings. We learned by discussing within our groups as well as by listening to different ideas shared by other groups". The CBEA workshops were designed in a way to provide exposure to a range of new ideas during discussions. The duration between two consecutive workshops provided enough time to think, reflect, and finally, change their perspectives if necessary. Reflection and critical thinking greatly contributed to social learning as well as the assessment process.

Since PRA tools are recognised for their compatibility with EIA and their role in facilitating learning [Sandham et al., 2019; Spaling et al., 2011; Sinclair et al., 2009], I used various PRA tools, such as transect walks, participatory mapping, workshops, and group activities in the next generation CBEAs. Since face-to-face dialogue can enhance learning, tools, such as workshops and group activities provided a platform where participants could interact, discuss, and debate, and learn from each other. The participants of group MG2 in Murang'a shared, "Group activities were fun and by working in groups we learned from each other. When we were given a task, we shared our ideas, had good discussions, and also argued with each other to come up with the best possible decision. In the entire process of group activities, we learned from each other". As described in Chapter 6 (section 6.2.2.2), PRA tools facilitated meaningful public participation, which stimulated critical thinking, and eventually, participants learned from each other. Also, these tools were effective in breaking the ice and making all the participants very comfortable, which helped smooth sailing of the CBEAs.

Frequent engagement over a period of time foster social learning [Ernst, 2019], and therefore, next generation CBEA had the provision for follow-up discussions. I did follow-ups with participants in each workshop by running a brief reminder session as well as asking them some follow-up questions immediately after introducing a new concept. In addition, I organised several voluntary meetings in different informal settings where participants were free to ask questions and refresh their memories (see section 6.2.2.2 in Chapter 6). These follow-up discussions worked as a learning catalyst where participants were exposed to the same subject multiple times, which helped them to think and reflect. Participant M4 from Murang'a reported, "You did follow-up with us every time we had a discussion by asking questions or discussing at the beginning of each meeting, which helped us understand things better and not forget". The follow-up discussions required an extra effort from the EIA team, but it worked well for most participants at both case study sites in the given circumstances (e.g., low literacy rates, language issues, etc.). The CBEA workshops were greatly benefitted because of the increased understanding and learning among participants as they were able to make informed decisions.

Other considerations

In addition to the above-mentioned barriers and enablers that were designed to be part of the next generation CBEAs, there were certain factors, such as effective facilitation, useful and

interesting information, and the role of facilitator that emerged in the data from both sites. All three factors hugely helped facilitate social learning during the CBEA workshops.

Effective facilitation, which encourages social interaction among diverse participants that eventually fosters social learning [Jones & Morrison-Saunders, 2017; Brummel et al., 2010; Steyaert et al., 2007; Schusler et al., 2003], was an important element of the next generation CBEAs. While I took some measures such as the use of PRA tools, etc. in order to facilitate meaningful participation and the remaining things, such as participant's willingness to be part of the CBEAs were largely dependent on the local context. Many participants from both sites informed that factors, such as the way I engaged with them, encouraged them continuously during the workshops, and also the way I am prepared (well-organised), really stood out from the way any meeting the participants had ever attended. Participant M17 from Murang'a reported, "Your approach was unique as you made sure that each of us must listen, understand, and participate. Unlike many local presenters, you engaged with us. During the meetings, you frequently made visits to different groups that helped us stay focussed". Besides my social science background, an early visit to Kenya, and the guidance from my committee members contributed to my understanding of the local context that I incorporated while facilitating the CBEA workshops.

Sharing of information is an important factor that influences social learning [Wals, 2011]. One of the barriers experienced during the CBEAs was the lack of access to adequate information in the local language. However, this lack of adequate information did not inhibit the CBEA participants from learning. A majority of participants from both sites found that information shared during the CBEAs was new and interesting, and had practical benefits. Participant M17 from Murang'a said, "In other meetings, we just wait for the speakers to finish so that we could go home as most of the meetings are repetitive, biased, and boring. But in the EIA, we were so involved and discussed many relevant things. There were many new and useful things to learn". The next generation CBEAs prioritised the local needs at both sides, which made it useful and interesting for the community members who gradually showed interest to learn about their own environment and even proposing solutions that were best suited to that context.

The role of facilitator, which is crucial to learning [Siebenhüner et al., 2016; Sims, 2008; Steyaert & Jiggins, 2007], emerged in the data as another key factor that helped participants from

both sites learn during the next generation CBEAs. Strong leadership or effective facilitation in a collaborative setting can foster social learning [Nykvist; 2014], which the next generation CBEAs at both sites experienced. In response to the question on what triggered learning, a majority of respondents from both sites listed qualities of my facilitation, such as non-judgemental and non-authoritarian, punctual, approachable, respectful of others, honest, good listener, energetic, passionate, compassionate, encouraging, caring, well organised, trustworthy, non-demanding, and pragmatic; providing clear communication and coordination; spending extra time and making extra effort (e.g., through follow-up meetings); simplicity, and maintaining comfortable body language and continuous movement (unlike sitting at one place) that encouraged them to learn. Participant M6 from Murang'a said, "You were very energetic and were involved in every meeting. You spoke softly and politely and did not reprimand us unlike many local presenters who are judgemental and biased and would not care". My background, previous training, and staying in the communities helped me understand the community dynamics at both sites better without following the step-by-step procedure, which Ison [2005] recommends. These qualities helped me facilitate the CBEAs smoothly, which were appreciated by the CBEA participants at the respective sites.

Social learning outcomes

Social learning is not only concerned with the process but also the outcomes at various levels (see section 2.4.1.4 in Chapter 2). In Chapter 4, I discussed the key indicators of social learning outcomes (see section 4.4.4), which are grounded in key themes I found in the literature and data (from the key informant interviews). I discuss the four subthemes of social learning outcomes at individual level that include cognitive, relational, moral development, trust, and one subtheme, i.e. collective action at collective level (Table 7.3). Social change, as explained by Measham [2013], is a slow and long-term process; nevertheless, there is a possibility of observing some early signs of change. In this section I focus on identifying such initial signs of change at individual as well as collective levels. In addition to the five sub themes at various levels, this section also discusses some unprecedented learning outcomes that were not necessarily part of the grounded subthemes. Since scaling-up of learning outcomes from individual to collective level is considered as one of the limitations in the social learning literature (see section 2.4.1.4 in Chapter 2), this section also explores the interrelationships between these outcomes.

Individual learning outcomes

Cognitive

The cognitive outcome, which is about the acquisition of knowledge, skills, and information [Sánchez & Mitchell, 2017; Rodela, 2014; Webler et al., 1995], was the first category that the next generation CBEAs witnessed. Since the CBEA participants were expected to be involved in decision making, the pre-CBEA phase was crucial for their capacity building where they learned many concepts, such as environmental assessment, sustainability, etc. (see Sections 5.2.2.1 and 5.3.2.1 in Chapter 5). The participants from the women's group KM2 in Kirinyaga reported, "We learned about sustainability and realised the significance of thinking beyond the current generation. We also learned the importance of taking care of our environment so that our future generation should not suffer". Similarly, participants from group MG4 in Murang'a reported, "Our minds have become broader and we are now open to many possibilities. For example, instead of using chemical pesticides, we are thinking of planting some local medicinal plants that may keep insects naturally away". Both the pre-CBEA and the CBEA phases were significant for the cognitive learning of participants from both sites, and they not only learned about various concepts but also had to apply those concepts to predict the potential project impacts and find mitigation measures.

Relational

The foundation of social learning lies in collaboration and collective action [Cundill et al., 2014; keen et al., 2005], which requires constructive social relationships [Medema et al., 2014]. Relation outcomes in the form of increased solidarity among people indicate a robust social learning process [Eriksson et al., 2019; Rodela, 2014; Pahl-Wostl, 2006; Eames, 2005], which the next generation CBEAs witnessed at both sites. Participant K2, who was also part of the MIUKA management committee in Kirinyaga, explained, "Prior to the EIA, the community members wouldn't talk casually to the management committee. But this EIA was amazing, it brought the community members closer to the management committee. Recently, a few members came to me asking for an extension of the payment date. Prior to this, they would just whisper and would not talk to me directly. I think we buried the boundary and we can talk freely". The increased bonding was not restricted among participants only, but the relationships between the proponents (GAKAKI and MIUKA) and participants also improved.

The CBEA workshops, especially group activities, during the pre-CBEA and CBEA phases, provided ample opportunities to participants for interaction, which contributed to increased solidarity and improved relationships. Participant M8 from Murang'a said, "The group activities brought people closer. In my group, there was someone with whom I did not have a cordial relationship but now we share a warm relationship". Further, the increased bonding and cooperation among participants helped participants work together in examining potential project impacts, finding mitigation measures, and develop environmental management plans by making better decisions to achieve communal goals.

Moral development

Moral outcomes in social learning can be manifested through positive changes in ethical principles or civic values where people put their egoistic demands aside to fight for communal goals [Rodela, 2014; Bull et al., 2008; Webler et al., 1995]. Changes in individual behaviours and values were experienced among some of the participants during the interviews. Participant M22 from Murang'a said, "I have become more water efficient after being sensitised in the EIA. Now I shut the tap off as soon as I am done with watering my crops. I have become concerned about others and future generations". Participant M19 from Murang'a said, "Whatever I learn in the EIA meetings, I share with others. Last week, I shared my learning on sustainability in our church fellowship. My son wanted to expand our house at the cost of some old indigenous trees, which I refused and asked him to change the plan as I could not think of destroying our natural environment". These change in behaviours and civic virtues among participant confirms learning outcomes of moral development.

Prioritising communal goals over individual interests through consensual decision making was quite prevalent throughout the assessment process, which explains the learning outcomes related to moral outcomes of social learning. Participant M4 said, "In many other meetings, often we have controversial arguments that may lead to occasional fights. In this EIA, we had healthy arguments where we learned from each other rather than fighting to prove our own arguments". Participants become more reflexive and develop the capacity to accommodate a diverse point of view in a deliberative forum [Rodela, 2014], which participants at both sites experienced during the CBEAs. Change in participants' attitude towards each other that was experienced in both the CBEAs helped make better decisions that benefitted the assessments.

Trust

Since social learning that entails good social interaction and meaningful participation tends to produce a set of social outcomes including increased trust among participants [Ernst, 2019; Reed et al., 2010; Muro & Jeffrey, 2008], the next generation CBEAs, which provided a robust platform for social interaction and meaningful participation (see section 6.2.2.2 in Chapter 6), thus, helped build trust among participants. Participant K12 from Kirinyaga said, "In the previous MIUKA meetings, we would come to deposit our dues and hardly interact with each other. Nevertheless, in the EIA meetings we interacted with each other, which helped us know and understand each other better, and now, I trust many of them".

Trust, as explained by Medema et al. [2014], could be built through an equal decision-making power, which the CBEAs had where participants' priorities and needs were addressed during the assessment process. The participants of group MG1 in Murang'a said, "Prior to the EIA, we did not trust the GAKAKI group (the proponent) that much and even did not know what they were doing. In case of any water-related issues, we would just blame the chairman and the GAKAKI committee. However, during the EIA, we came to know about various challenges associated with the project and the role of GAKAKI. By attending those EIA meetings, we clarified our doubts, had a better understanding of the project, and now, we do not distrust them". It was the increased trust level that encouraged the CBEA participants to agree to share the follow-up and monitoring responsibilities. Participant K10, who is also a member of the MIUKA management committee in Kirinyaga, said, "We will make sure to invite some non-management members for any project related work. Sharing of responsibilities is a good step to initiate the process of mutual trust". Since mutual understanding and trust are the key ingredients to achieve common goals [Medema et al., 2014], the successful implementation of the CBEAs itself implies that these elements were embedded in the assessment process.

Collective level

Collective action

The outcomes of social learning go well beyond individuals and can be manifested through joint or collective action [Elias et al., 2017; Nykvist, 2014; Eames, 2005], which may not be common to find [Measham, 2013]. While social change is an evolutionary process and takes time as discussed earlier, for this research, I have instead used the term 'collective action',

which can be linked to what Measham [2013, p.1475] considers as the 'early signs' of social change.

Learning from the experience of the CBEAs also changed the attitude of participants, which resulted in collective action in Murang'a. The participants of the group MG4 in Murang'a shared, "Prior to the EIA, if there was a leakage, it was hard to get some help despite repeated requests as community members would make all sorts of excuses. Yesterday, there was leakage and we made just one phone call to a few members. There was a surprising turn up as around 15 members came for help, which was quite a change from the past. Thanks to the management plan where we discussed the sharing of responsibilities". Similarly, in a follow-up interview on September 4 2020, after more than a year from the CBEA was conducted in Murang'a, participant M1 shared, "I went to help others in fixing a leakage, which did not affect me". There are limited data on this kind of collective action or early signs of change that were experienced.

The transformation of existing forms of governance structure is considered as the outcome of a robust social learning process [Muro & Jeffrey, 2008; Rist et al., 2007]. Participants at both sites experienced a change in the management regime during the implementation of the next generation CBEAs. Prior to the CBEAs, community members felt that it was the responsibility of the proponents (GAKAKI and MIUKA) and they (community members) were not consulted in decision making. After being part of the CBEAs, the proponents and community members agreed to co-share the project responsibilities at different capacities, which was a collective agreement between the proponents and community members (see section 6.2.2.3 in Chapter 6). The collective venture of the proponents and community members to improve the management of the interrelationships between the social and ecological systems, as Keen et al. [2005] postulates, is itself an example of collective action in social learning. As described in Chapter 2 (section 2.4.1.4), social learning involves both process and outcome that goes beyond individuals, these examples of collective action reinforce the argument of robust social learning that was experienced in the next generation CBEAs.

Other outcomes

Besides the key learning themes at both individual and collective levels, some learning outcomes emerged in the data, which could not be linked directly to one of the key themes. For example, participant K6, a grandmother from Kirinyaga was delighted to share, "I had never spoken in front of so many people in my life before the EIA. The maximum number of people I

have spoken was at the family gathering during Christmas. I felt so happy and confident after speaking the things we learned in front of so many people and that was in English". In a different incident, participant K7 from Kirinyaga said, "When I was traveling yesterday, I saw someone littering plastic bottles on the road. I stopped and asked the person not to pollute our environment by littering and requested him to dispose of it properly. Prior to the EIA, I would not do it. After learning about the environment, I gained confidence and courage to speak to someone I did not know at all". Individual confidence or courage as a learning outcome is not precisely discussed in social learning literature but is well described as self-transformation in transformative learning literature [Duveskog et al., 2011]. Table 7.3 summarises all learning outcomes in relation to the next generation CBEAs.

Table 7.3 Social learning outcomes

	Individual	**Collective**
Grounded themes	Cognitive (acquisition of knowledge)	Collective action (joint action, transformation in governance structure, etc.)
	Relational (increased solidarity among participants)	
	Moral development (change in civic virtue)	
	Trust (increased trust level)	
Other	Self-transformation (Increase in confidence and courage)	

The experience of the next generation CBEAs sheds some light on the scaling-up issue discussed earlier in Chapter 2 (see section 2.4.1.4). For example, collective action as social learning outcome did not happen in isolation in this context, rather next generation CBEA provided a common platform to its participants to discuss, deliberate, and learn, which engendered certain outcomes.

Through their meaningful participation and involvement in decision making, participants acquired knowledge and skills where knowledge was co-created rather than imposed (e.g., cognitive). The acquisition of knowledge and skills boosted confidence and courage among many participants, which was a transformative change at the individual level (e.g., self-transformation). Frequent interaction and physical presence during the entire learning process

helped participants bond with each other, which improved their relationships (e.g., relational). Improved relationships and bonding helped participants understand each other better and bridge the trust gap not only among the participants but also between the proponents and community members. The increased awareness, solidarity, and trust helped participants at the respective sites change their perspectives and attitudes (civic virtue). Participant M22, who was also a GAKAKI management committee member in Murang'a, said, "The EIA did influence and change the thinking of many participants. In the GAKAKI project office, there has been an increase in the number of monthly payments. Many members have started clearing their dues. People are now open to many possibilities and taking their responsibility seriously. The community members are more committed to their role". These learning outcomes at the individual level imply that all the outcomes are interrelated and each outcome led to another, which eventually contributed to social learning.

The relationships among learning outcomes, however, were not restricted to an individual level only, but all the key individual learning outcomes engendered collective actions, which addresses the other limitation discussed in social learning literature (i.e., what leads to change, see section 2.4.1.4 in Chapter 2). Once participants learned about the significance of their respective projects and participated in the CBEA processes, the trust gap between the proponents and community members was bridged leading to the collective sharing of responsibilities, which was a change in the governance structure. Participants M3 and M15 from Murang'a shared, "Many participants did not know the details about the project. We never felt that we were part of the project because prior to the EIA, it was GAKAKI who made all the decisions in their office. These (EIA) meetings brought us together where we learned about the project in detail. Our thinking and attitude changed towards the project and most of us trust the GAKAKI (management committee) members. That's why when there was this requirement (to fix the pipe leakage), we felt responsible to help the (GAKAKI) committee members". Thus, this implies that individual learning outcomes i.e., cognitive, relational, moral development, and trust are all interconnected that could lead to collective action, which Reed et al. [2014] also propose.

The transformative change among participants at the individual level was tangible since many participants, especially those who were introverts, were able to represent their groups and share their opinions in front of all after gaining confidence. There was a change in attitude among participants towards each other as well as towards the environment, which was noticeable

during the CBEAs at both sites and also emerged in the data. The change in governance structure at both sites and collective action (Murang'a) are the examples (early signs) of transformative change that goes beyond the individual level.

7.4 Limitations

Social change as a tangible learning outcome takes time to develop [Measham, 2013]. I have discussed the individual learning outcomes that were evident during the research. Moreover, I have also shared limited examples of collective actions that were witnessed within the restricted time, which I would argue as the early signs of change.

One of the anticipated learning outcomes, which is frequently discussed in the learning literature, is an expansion of social networks. There were new participants in each CBEA workshop, including some who were not directly from the involved communities. Due to unprecedented circumstances and logistic challenges, I could not make follow-up visits to complete a comprehensive social network analysis and explore the possibility of change in networks extending beyond the directly affected communities. It was also beyond the scope of my research to make follow-up visits to the communities after some time had passed. Thus, this research does not make claims regarding any tangible, transformative social change as a learning outcome.

7.5 Chapter summary

In this chapter, I have discussed learning in the context of next generation CBEA. More specifically, I have examined the nature of the relationships shared between next generation CBEA and learning. I endeavoured to understand social learning in the context of EIA by examining the key measures of the process and indicators of the learning outcomes that were part of the next generation CBEA frame (see section 4.4.4 in Chapter 4).

The nature of the relationships between next generation CBEA and learning is precisely symbiotic. The next generation CBEAs that were tested at two different sites provided a platform where learning was nurtured. The pre-CBEA phase was vital for nurturing learning. The key ingredients of the next generation CBEAs, such as collaboration, early engagement of participants, capacity building laid the foundation for social learning. On the other hand, the main CBEA phase, where participants learned while simultaneously applying their knowledge in decision making that eventually helped further the CBEAs at both sites.

Social learning is the next topic that I have discussed in this chapter. As discussed in Chapter 2 (see section 2.4.1.4), social learning entails both process and outcome, I endeavoured to examine the key elements of the process in the context of next generation CBEA that enabled learning among participants. Except for field visits, the remaining elements that included effective communication, collaboration, understanding of the local context, conducive learning environment, meaningful public participation, critical reflection and thinking, use of PRA tools, and follow-up discussions, which I had considered as part of the learning process (see section 4.4.4 in Chapter 4), helped facilitate learning. Field visits could not be incorporated in the CBEAs due to logistic and context-specific challenges. All the above-mentioned learning enablers were reflected in the data, which confirms the robust social learning process.

The manifested learning outcomes further confirm the incidence of social learning in the next generation CBEA context. Participants informed that they acquired knowledge from their participation in the CBEAs. Besides acquiring knowledge, participants were delighted to share the increased solidarity and trust level within the respective communities and how their thinking has changed, and how they feel more responsible. In addition to these individual learning outcomes, the CBEAs also witnessed a change in governance structure i.e., collective sharing of responsibilities between the proponents and community members, and collective efforts (in Murang'a only) in resolving some project-related issues. Besides these grounded themes, participants also informed that their level of self-confidence and courage has increased from their participation and learning in the CBEAs.

Besides establishing the relationships between next generation CBEA and confirming the incidence of social learning, this chapter attempts to address the existing gaps in the social learning literature. In section 7.3, I have discussed how an understanding of the local context helped facilitate learning. The Chapter explains how all individual learning outcomes might lead to collective action. Finally, to elucidate the scaling-up issue in social learning, it was evident that all the social learning outcomes are interrelated and each individual outcome is equally important that may encourage people for collective action.

Chapter 8
Conclusion & policy implications

8.1 The research context

The touchstone of this research is the pressing global need for sustainability, especially in terms of ecological integrity and socioeconomic justice. A paradigm shift in EIA is justified against the neoliberal version of sustainability that often endorses socioeconomic benefits at the expense of natural capital [Bond & Dusík, 2020]. The inadequacy of current narrowly-focused EIA processes that are confined to avoiding significant adverse environmental effects and mitigating negative impacts is widely discussed in the literature [Ho & Tollefson, 2016; Bond et al., 2012; Gibson, 2006b]. Next generation EIA is a holistic approach that looks beyond the limited scope of current EIA and is in the vanguard of integrated approaches navigating assessment practice towards sustainability and pursuing mutually reinforcing gains in each and every sphere [Doelle & Sander, 2020; Sinclair et al., 2018; Ho & Tollefson, 2016].

The purpose of this research was *to develop a framework for CBEA that incorporates key next generation EIA principles including sustainability, meaningful public participation, follow-up and monitoring, and learning and, in doing so, to contribute to both CBEA practice and the social learning approach.* In order to serve this purpose, I reviewed the literature on EIA best practices, shortlisted the above four next generation principles, developed a frame (guidebook) for next generation CBEA, tested the potential of the frame, identified various barriers and enablers, and examined the relationships between CBEA and social learning.

Kenya's vision for sustainable development led the country through a number of policy reforms that arrived at the Environmental Management and Coordination Act (EMCA), introduced in 1999. The act was developed predominately through considering existing international environmental legislation that was remodeled to meet Kenyan standards [Mwenda et al., 2012; Kibutu & Mwenda, 2010]. This research examined the potential of the next generation frame in Kenya due to the option available in this Act for a collaborative approach including the scope for incorporating advanced forms of CBEA in various small-scale, community-based projects. The next generation CBEA frame was examined in two different case studies in Kenya: the GAKAKI small-scale irrigation water project in Murang'a County and the MIUKA irrigation project in Kirinyaga County. To fulfill the legal requirements of Kenyan EIA,

the next generation CBEAs were implemented in collaboration with licensed Kenyan EIA experts, the project proponents (GAKAKI and MIUKA), and local community participants. I used PRA tools, such as workshops, group activities, and participatory mapping, to facilitate the CBEAs, which also created a conducive learning environment at both sites.

My next generation CBEA frame is a sincere effort to contribute to the potential for an advanced form of CBEA, enhancing what is typically done as part of the environmental assessment of low and medium risk (community-based) projects in Kenya. The next generation CBEAs were conducted against the backdrop of an existing expert-driven decision-making process, yet were designed to meet all the relevant legislative requirements in Kenya, with an aim of improving the quality of the assessment process. Developed with a strong emphasis on substantive outcomes, my next generation CBEA frame created space for pursuing the substantive outcomes noted by Cashmore [2004], such as diversity, inclusion, pluralism, equality, emphasis on civic virtues and values, negotiations, meaningful participation, sharing of responsibilities, and social learning. Further, as evidenced in the two case studies, my next generation CBEA frame represents an integrated approach to assessment, which Sinclair et al. [2018] describe as necessary for the fourth stage and yet largely aspirational stage of EIA evolution. I believe, the primary reason behind the successful implementation of the CBEAs in my research in Kenya lies in the strong fundamentals of the next generation components that were integrated and practised during the processes. The next section outlines key findings and conclusions related to each objective.

8.2 Research objectives: Conclusions and contributions

The first objective of this research was *to critically analyse current African CBEA practices to understand any recent developments*. The research findings outlined in Chapter 2 (section 2.2.2) suggest that despite being a relatively new approach, CBEA in Africa is slowly progressing, for example, by adopting innovative tools such as PRA, and integrating local values and knowledge [Sandham et al., 2019; Kilemo et al., 2014; Spaling et al., 2011]. Despite some limited success (e.g., CAMPFIRE in Zimbabwe), the notion of a community-based approach to resource management in Africa, especially community-based conservation, is significantly impeded due to a variety of barriers, including elite capture, low levels of participation, lack of transparency and effective communication, and the issue of sharing power [Sandham et al., 2019; Musavengane & Simatele, 2016; Child et al., 2014; Kilemo et al., 2014; Sowman & Wynberg,

2014]. Identifying and establishing the required balance of responsibilities and interests among various actors within existing socio-economic, political, and ecological contexts creates further challenges to community-based approaches in Africa [Tantoh & Simatele, 2017]. Community-based approaches, especially in the context of natural resource management, have yet to overcome some of these identified challenges by adopting strong governance measures, such as inclusiveness, fairness, accountability, transparency, and capacity building [Maynard & Jacobson, 2019]. Findings for this objective provide a broader perspective on the status, efficiency, and challenges to community-based approaches in the African context.

The second objective was *to develop a framework for next generation CBEA*. I successfully developed a frame that was a blend of concepts drawn from the next generation EIA literature in their most advanced forms, and tailored to cater to the needs of community-based development projects. This objective has been addressed in two different stages in chapters 2 and 4, where chapter 2 (section 2.4.1) focussed on analysing the EIA literature to select the most relevant concepts, while chapter 4 shaped those selected concepts into practice (sections 4.5 & 4.6). After reviewing the literature on next generation EIA and understanding the status and local priorities of Kenyan EIA, I selected four next generation components to focus on: sustainability, meaningful public participation, follow-up and monitoring, and learning. Some other components, such as transparency and accountability or consideration of climate change, were indirectly integrated into the assessment process, which made the CBEA frame more robust. Each component was crafted carefully by incorporating the latest concepts from the literature and fitting them into the Kenyan context. For example, meaningful public participation in the next generation EIA context emphasises a deliberative approach to decision making where the process must stress equality, transparency, and the meaningful involvement of participants for civic legitimacy.

The architecture of the next generation CBEA, discussed in Chapter 4 (section 4.5), is the schematic representation of the next generation CBEA process, and includes the preparatory pre-CBEA and main CBEA phases. For example, understanding of the local context, establishing rapport, and strengthening the capacity of participants were all part of the pre-CBEA phase, whereas the CBEA phase included screening, scoping, and developing the management plan. The next generation CBEA frame (see section 4.6 in Chapter 4), on the other hand, is a guidebook that describes steps, including various tools, such as PRA tools, for implementing the

CBEA. Table 4.7 shares the details of the frame and explains the goal and rationale of each activity, along with the methods used. For example, one of the goals was to develop an understanding of the local context, and in order to become familiar with the project locations at the respective sites I used PRA tools, such as participatory mapping and transect walks. Findings of this objective contribute to understanding the rationale behind the next generation CBEA concepts and the practical interpretation of those concepts, which is useful for implementing community-based assessments of small-scale projects.

The third objective was *to examine the potential of the next generation CBEA framework*. In order to address this objective, I tested the next generation CBEA frame at two different case study sites (see Chapter 5). As described in Chapter 5, both of these projects were small-scale irrigation water projects that required EIA as per the Kenyan legislation. I collaborated with government institutions, namely NEMA and WRA, licensed EIA experts, the project proponents (GAKAKI and MIUKA), and local administration. Since both the proponents were community-based organisations at the respective case study sites, getting cooperation from the community members was not an issue. The implementation process started only after the EIA experts and the proponents at both sites agreed to cooperate. The next generation CBEAs were implemented in two phases i.e., the pre-CBEA and CBEA phases as described above.

The findings suggest that the two next generation CBEAs were implemented successfully with certain modifications that were required to adapt to the local context at the respective sites (see Chapter 5). For example, an exposure visit to a similar project site could not be conducted at either of the locations due to logistic issues. At the second case study site, the CBEA phase started with scoping since screening was already done by the EIA expert prior to my involvement. Nevertheless, the CBEAs successfully integrated all of the selected next generation components during implementation, while still meeting the legislative requirements for Kenyan EIA. An understanding of local context and spending sufficient time in communities, which Gibson [2017] and O'Faircheallaigh [2017] strongly recommend, are key to the success of any community-based assessment.

The results further reveal that meticulous planning, good understanding of local context, clear communication and transparency, creation of a conducive learning environment that was open and inclusive, and capacity building with participants during the pre-CBEA phase all contributed immensely to the successful implementation of these CBEAs. Regardless of the

language and cultural barriers and low literacy rates, the collaborative effort at both sites hugely contributed to the overall success.

The fourth objective was *to identify and document various barriers and enablers that may inhibit or enable the implementation of specific next generation CBEA activities*. Findings from exploring this objective primarily focussed on the four core components, i.e., sustainability, meaningful public participation, follow-up and monitoring, and (social) learning.

Sustainability

Integration of sustainability into conventional EIA has had limited success [Morrison-Saunders & Fischer, 2006]. Sustainability in the context of the next generation CBEAs was a comprehensive concept, which entailed the generic criteria of sustainability, trade-off rules, consideration of alternatives, interconnectedness, and emphasis on local context (see section 4.4.1 in Chapter 4). Findings for this component suggest that except for the generic criteria as a comprehensive concept, these elements were well integrated into the sustainability component during the CBEAs.

Regardless of participants' active involvement in selecting some of the elements of the generic criteria that were best suited to their local needs, the application of the generic criteria of sustainability as a comprehensive package, which Gaudreau and Gibson [2010] describe as a daunting task, was challenging at both case study sites. Besides being an alien, Western concept, applying the comprehensive and complex generic criteria was also impeded by my limited knowledge of the local language, the low literacy rate among participants, and time and resource constraints. Hence, out of the eight elements of the generic criteria, three elements (i.e., intergenerational equity, resource maintenance and efficiency, and avoiding balancing and pursuing mutual seeking benefits) from the first case study site and two elements (i.e., intergenerational equity, and resource maintenance and efficiency) from the second site were directly selected by the participants as part of the local sustainability criteria (see section 6.2.2.1 in Chapter 6).

Despite the above-mentioned challenges, the remaining elements of the generic criteria were indirectly integrated into the CBEAs. For example, during scoping, participants examined potential project impacts on their most valued ecosystem components, which included environmental, social, and economic components, and this exemplifies the 'socio-ecological system integrity', one of the remaining elements of the generic criteria. Throughout the CBEAs,

the wellbeing of both local communities and the environment (socio-ecological integrity) was given the utmost priority. Similarly, once participants' capacity was built in the pre-CBEA phase, they actively participated in an open, transparent, and democratic decision-making process, which addressed the criteria of 'socioecological civility and democratic governance'. Direct integration of the generic criteria as a package might be challenging for small-scale community-based projects in developing countries; nevertheless, my Kenyan experience suggests that the elements of the generic criteria can still be integrated in various ways. Thus, with some context-specific modifications, the next generation CBEAs overcame this barrier and managed to have a strong sustainability component, which was quite an advance compared to the Kenyan standard.

Meaningful public participation

Unlike the experience of public participation in many African countries, where flaws in design and implementation often reduce the scope for social justice [Sowman & Wynberg, 2014], the case study CBEAs were able to successfully integrate and practice next generation qualities of public participation (see section 6.2.2.2 in Chapter 6). The elements that made public participation meaningful were fair notice and suitable time, early and ongoing participation, openness and transparency, deliberation, capacity building, use of PRA tools, follow-up meetings, and establishing a conducive learning atmosphere. Socio-cultural factors, such as language, and gender, which are often neglected in conventional EIAs in Kenya [Omenge et al., 2019], were given due attention in the CBEAs. On the other hand, inclusive and adequate representation was only partially successful in Murang'a in the absence of youth participation due to socioeconomic and cultural barriers. Adequate and accessible information was another barrier to public participation at both sites, which was exacerbated by low literacy rates among participants and the unavailability of relevant literature in the local language.

Local context played an important role in the next generation CBEAs. For example, community members in Murang'a had reservations about including youth, considered as anyone below 25 years of age, as they were considered too immature to make critical decisions, which restricted youth participation in Murang'a. Besides, it was challenging to include young people in the CBEA workshops in Murang'a as many of them were either attending various academic institutions or were employed. Thus, local sociocultural dynamics, also experienced by Kilemo et al. [2014] and Spalling et al. [2011] in their respective work, was a major factor that restricted

youth participation in Murang'a. The challenge of adequate and accessible information, on the other hand, was mitigated in many ways. For example, I arranged for interpretation at workshops and follow-up meetings. Additionally, group leaders, who were literate and had a command of both English and Kikuyu, were supplied with materials to take notes of important information and share with their fellow group members. I also organised follow-up sessions to clarify key points and explore questions further. Thus, in the absence of any written information, participants were still supported in many other ways. Public participation in the CBEAs was not merely an administrative formality as it often is in EIAs in Kenya [Omenge et al., 2019; Okello et al., 2009], but rather it empowered participants to make their own informed decisions for a sustainable future.

Follow-up and monitoring

Regardless of advancements in EIA follow-up concepts, follow-up and monitoring continue to be a challenge for a majority of EIAs conducted across the world [Jones & Fischer, 2016]. Factors that contributed to strong follow-up and monitoring in the next generation CBEAs include openness and transparency, collaboration, sharing of responsibilities, adaptive management practice, and communication and learning (see section 6.2.2.3 in Chapter 6). Despite these enablers, capacity building of community members regarding follow-up and monitoring remained a challenge due to the lack of time and resources. The integration of traditional knowledge was also not adequately accomplished in the CBEAs as much of this had been lost during the agricultural transformation and modernisation of farming in the 1960s and 70s when farmers were encouraged to pursue a Western way of farming.

Since there is no clear mandate for public participation in the environmental audit and monitoring process in Kenya, the involvement of participants is often perceived as voluntary (as explained by one of the EIA experts). An environmental audit requires technical knowledge and is challenging for community members, and hence, since both projects had limited human and financial resources the proponents at both sites took the primary responsibility for follow-up and monitoring. Nevertheless, during the development of the management plans the proponents and community members agreed to share certain follow-up and monitoring responsibilities according to their respective capacities (see section 6.2.2.3 in Chapter 6). In the absence of relevant traditional knowledge, the proponents and community members at both sites agreed to supplement the knowledge gap with modern scientific information during the development of the

management plans. The management plans were able to fulfill more than what is required in Kenyan EIA legislation by successfully incorporating some of the advanced follow-up and monitoring elements.

Learning

Learning is an integral part of EIA and is necessary for an effective assessment [Noble et al., 2019; Sinclair et al., 2018]. The next generation CBEA frame was designed to facilitate learning, especially social learning, as part of the effective implementation of the CBEAs (see section 4.4.4 in Chapter 4). The findings on learning show that various factors, including effective communication, collaboration, a good understanding of the local context, a conducive learning environment, meaningful participation, critical reflection and thinking, the use of PRA tools, and follow-up discussions, all contributed to a robust learning process (see section 7.3 in Chapter 7). On the other hand, field visits to a similar project site, recommended as part of facilitating learning, could not be organised due to logistical issues.

The absence of field visits did not deter the CBEA participants at both sites from learning. The pre-CBEA phase was vital for participants, where they learned key concepts such as EIA and sustainability (see section 7.3). Their learning continued throughout the assessment process, and participants not only learned different concepts but also applied them to make informed decisions, which helped further the CBEAs at both sites.

The fifth objective was *to examine and explain the relationship between next generation CBEA and social learning to identify the transformative aspects of social learning that emerged and that may be possible*. This objective was about social learning in the context of CBEA and the relationships between them. The findings on the relationship between CBEA and social learning exemplify how both CBEA and social learning complement each other (see section 7.2 in Chapter 7). The CBEAs at both sites provided a platform where multiple actors collaborated, working collectively to make decisions through the sharing of information and ideas, which is also required to facilitate social learning [Murti & Mathez-Stiefel, 2019]. Capacity building during the pre-CBEA phase also helped participants learn. Activities during the CBEA phase, such as screening, scoping, and developing management plans provided an opportunity for participants to work and learn collectively and to apply their learning, knowledge, and skills to make informed decisions, which helped improve the assessment outcomes. Thus, the

interdependency between CBEA and social learning suggests a symbiotic relationship between them.

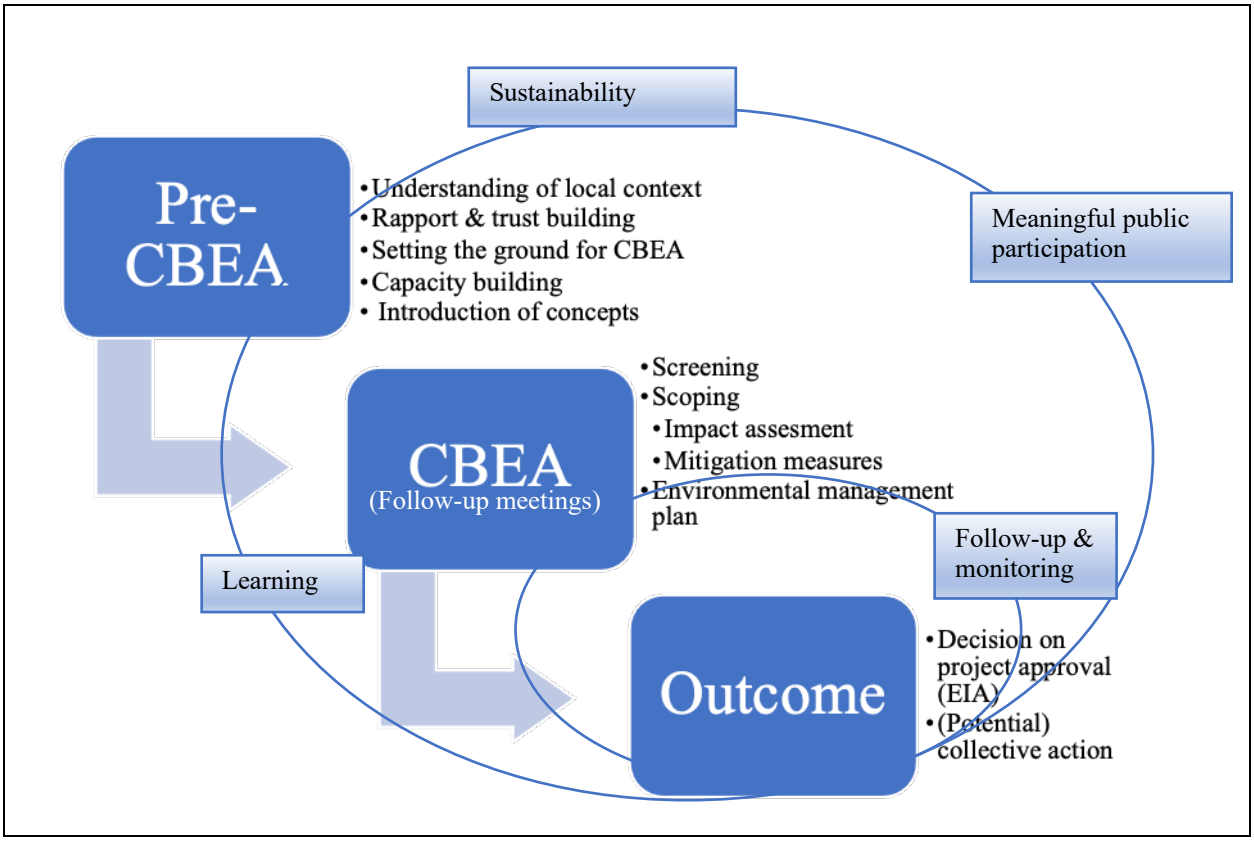
Social transformation towards sustainability as an outcome of social learning that transcends beyond individual levels is highly emphasised in the social learning literature [Siebenhüner et al., 2016]. As social transformation or change is a long-term process, the findings related to social transformation were explained through learning outcomes at individual and collective levels (see section 7.3 in Chapter 7). Besides the acquisition of knowledge, the social learning process contributed to increasing solidarity and trust among participants that encouraged them to work together towards a common goal. Further, learning also encouraged a change in civic virtues at the individual level. For example, an increase in the monthly collection of fees in Murang'a, where community members cleared their dues after learning the importance of the potential project, signifies a change in civic virtues. Besides the four key thematic learning outcomes (i.e., cognitive, relational, moral development, and trust), changes in confidence and courage at the individual level emerged in the data as another learning outcome. Transformation in the resource governance structure at both case study sites can be related to early signs of social change that was experienced at the collective level. These learning outcomes demonstrate that social learning is not restricted to just acquisition of knowledge, but it can transcend beyond that to where (early signs of) social change can be manifested through a change in relationships, trust, and civic virtues at the individual level. All the individual learning outcomes were interrelated, and this can lead to collective actions, for example, changes in resource governance structures at the collective level.

Despite limited learning outcomes at the collective level, it is fair to argue that the entire process of social learning was not merely a matter of good public participation but that learning happened and outcomes were manifested at various levels.

As discussed earlier, the purpose of this research was to develop a framework that has the above-mentioned next generation components and that contributes to CBEA practice and social learning. It is evident from the research findings that next generation CBEA was successful in Kenya, with some context-specific modifications to how it was initially designed. In Chapter 4 (see section 4.5), I presented the proposed architecture of next generation CBEA. Figure 8.1 presents a revised version of the architecture that includes the changes resulting from the testing of this advanced form of CBEA in Kenya.

Figure 8.1 shows that sustainability, public participation, and learning are essential components of both the pre-CBEA and CBEA phases. Participants are expected to learn the concept of sustainability in a participatory process in order to apply the concept appropriately in decision making during the CBEA phase. Learning is iterative and is reflected throughout the process (mostly at the individual level) and may pave the way for collective action outcomes, as depicted in the figure below. Follow-up and monitoring are largely part of the CBEA phase, and is discussed during the development of the environmental management plan. Follow-up and monitoring start after the commencement of the project, and thus, is not depicted in figure 8.1, which is restricted to the environmental assessment process.

Figure 8.1: The revised next generation CBEA architecture



8.3 Conventional low and medium risk project EIA in Kenya in relation to next generation CBEA

As described in Chapter 4 (see section 4.2), the scale of EIA in Kenya depends on the significance of a project's environmental impacts, and thus the proponents of many small-scale low and medium risk projects are required to complete the initial screening phase of the Kenyan

EIA process. Being small-scale irrigation projects, both of my case study projects needed to comply with NEMA screening requirements.

Table 8.1 provides a comparison of the process typically followed in a conventional EIA screening process for low and medium risk (community-based) projects in Kenya, and the next generation CBEA I implemented in these cases. The next generation CBEAs were conducted in collaboration with the local EIA experts as per the required legislative guidelines, and the data generated from the CBEAs complemented well the information gathered by the licensed EIA experts, which resulted in the information available for making the EIA decision being more meaningful for the communities and more robust for the regulator.

Table 8.1 Kenyan EIA (screening) vs next generation CBEA

Steps in EIA screening's in Kenya	Content/methods (Screening)	Steps of next generation CBEA	Content/methods (Next generation CBEA)
Project and site description	Information on project location, topography, vegetation, climate, justification of the proposed site, etc. are collected by project proponents. There is no public participation at this stage.	Pre-CBEA phase: Introduction	Personal EIA practitioner introductions, introduction to CBEA (concept, importance, etc.) and discussion of forthcoming (group) activities and decision- making rules. Understanding the local environment, identification of local issues, and participatory mapping. Public participation starts at the first meeting.
Collection of baseline data	Data collected by the proponent to describe the status of the project site prior to the onset of any project-related activity. No public participation happens at this stage.	Pre-CBEA phase	Visioning exercise (future expectations), and defining sustainability (in local terms). PRA activities, such as workshops and group activities conducted with participants to gather relevant information.
Data analysis	Done by the proponent. Methods, such as checklists, matrices, overlays, etc. are recommended by NEMA. There is no public participation at this stage.	CBEA screening	Project justification, consideration of project alternatives, and identification of most valued ecosystem components. PRA activities, such as workshops and group activities conducted with participants to gather information.
Evaluation of significance of environmental impacts	The proponent is expected to use the already gathered baseline data to evaluate the significance of project impacts. No public participation is required at this stage.	Visit to the proposed project site	Site visit by the proponent and the participants to understand the topography of the location and justification of the project site. Transect walks (PRA tool) used to conduct this activity.
Evaluation of alternatives	Proponents must consider alternatives to and alternative means while evaluating project alternatives. There is no public involvement at this stage.	CBEA scoping	Methods, such as workshops and the nominal group techniques, used to examine the potential project impacts and identify mitigation measures for the

			identified negative project impacts. Participants are directed to use the sustainability lens developed in the visioning exercise for both of these activities.
Consultation and public participation	Communities that are most likely to be affected by the potential project are consulted. Proponents are expected to share all the project details and collect community members' views/concerns. There is no specific approach recommended for participation.	The environmental management plan	The proponent and participants jointly develop the management plan and discuss follow-up and monitoring responsibilities.
Preparation and submission of the project report	Done by the proponent with the help of a licensed EIA expert.	Preparation and submission of the project report	Done by the proponent with the help of a licensed EIA expert, where the EIA expert ensures all the information collected throughout the CBEA is reflected in the report.
Review of project report	By the respective authority.	Review of project report	By the respective authority.
Decision	No further EIA studies required, license given with necessary conditions, or rejection.	Decision	No further EIA studies required, license given with necessary conditions, or rejection.

8.4 Policy implications

As Table 8.1 makes clear, there are a number of policy implications from my work if a next generation CBEA approach is to be implemented in relation to EIA screenings in Kenya. It is worth remembering that many of these small-scale projects, and especially water projects, have profound regional and local sustainability implications as my research has established. Reflecting on this and the nature of the outcomes of my CBEA work leads me to suggest the following policy implications, which are important for EIA practitioners, local communities, and NEMA to consider. Table 8.2 provides a summary of the policy implications, the rationale behind each, and the steps should be taken to incorporate these amendments into the EIA policy. Each is described in more details following the table.

Table 8.2 Policy implications

Policy area	Rationale	Steps
Integration of pre-CBEA phase into EIA screening	To enhance understanding of the local context as well as the needs and priorities of local people To build rapport and trust To share project-related information	EIA experts and project proponents must spend additional time in the potential affected communities
Meaningful public participation in EIA screening	To address public concerns	Meaningful participation must include factors: Early and ongoing participation Openness and transparency Inclusive and adequate representation Discussion in local language
Allocation of additional time and resources	To integrate pre-CBEA phase and meaningful participation	Proponents must spend additional time and resources to facilitate a reasonable EIA screening process

Learning-oriented EIA screening	To engender positive outcomes at different levels	EIA facilitators make sure to provide an open platform for participants to engage in discussions and deliberations where community members will be free to ask questions and share their ideas
Integration of a robust post-project audit and monitoring process	To design a participatory follow-up and monitoring plan	Project proponents and EIA experts must include community members in the follow-up and monitoring plans
Integration of sustainability-oriented EIA	To produce sustainable outcomes	Policy makers must ensure a holistic and integrated approach to EIA and move beyond check-box metrics

The pre-CBEA phase in next generation CBEA is very important. This is particularly so since Article 44 of the Kenyan Constitution emphasises local language and culture. EIA experts/facilitators therefore need to gain an understanding of context, including local culture and traditions, issues, priorities, and needs, prior to the beginning an EIA for small-scale community development projects, and this needs to be reflected in Kenyan EIA policy. The screening process in Kenya has largely been the responsibility of proponents and the nexus between proponents and EIA experts. Since the EIA screening process is the responsibility of the project proponent, the pre-CBEA phase could be a stepping stone for the proponent, especially for low and medium risk (community-based) projects, towards understanding local needs and priorities and promoting the sociocultural principles of EIA that value traditional ways of life. Also, if extra effort is put into the pre-CBEA phase, any trust gap between the proponent and communities could be at least partly alleviated.

Consultation and public participation are one step required in Kenyan EIA screenings (Table 8.1), but research shows that local people are often consulted after many key decisions have already been made, in fact the Act promotes this by having participation occur at the end of the process. Also, the legislation recommends the incorporation of public opinions/concerns in the project report without any real guidance as to how to engage the public. My own experience with public participation in Kenyan EIAs outside the two case studies and my discussions with Kenyan EIA experts helped me understand how EIA screenings, in practice, lack in-depth public

engagement, thus basically defeating the constitutional requirement of public participation in decision making (e.g., Articles 10 & 69). Based on my CBEA experience in Kenya, it was evident that meaningful public participation can be conducted even with limited resources. My findings reveal the need to reflect on the policy and guidance currently in place for EIA screening to identify approaches to ensure more meaningful participation, including early and ongoing participation, openness and transparency, and inclusive and adequate representation. Further, my two case studies also reveal the need for NEMA to develop more thoughtful indicators of evidence of participation than materials and forms filled out in English, especially given that the constitution provides for the freedom of expression for individuals in any local language (e.g., Article 44 on language and culture).

My findings show that spending time in communities and engaging in informal interactions enables one to be more respectful and sensitive to local priorities, thereby producing EIA outcomes more attuned to the local context. Achieving this would require some rethinking of the time and resources needed to complete CBEA screenings. The pre-CBEA, for example, is crucial for understanding local socioeconomic and environmental dynamics, and for building rapport, trust, and capacity. As well, group activities, including the use of PRA tools, are highly recommended for encouraging participant engagement in CBEA, and these also require time to implement effectively. However, many proponents may not have the necessary time and resources to allocate to this, and hiring a consultant may cause extra strain for already resource-deprived communities. The existing EIA policy and guidelines should direct or guide proponents and EIA experts to be sensitive towards the time and resources needed to adequately understand local sustainability issues.

Based on my experience with CBEA implementation in Kenya, I found that social learning is much more than simply the sharing of opinions, ideas, experiences, and knowledge [Assuah & Sinclair, 2019]. Social learning entailed an active process of full dialogue, including the sharing of ideas, discussions, and deliberations, which enriched the CBEA outcomes. Both case studies revealed how a learning-oriented CBEA can engender positive outcomes at various levels. The current EIA legislation in Kenya, especially regarding the screening process, does not have any specific provisions that promote learning among participants. Given the learning outcomes found in my cases, as well as in other research in this regard in Kenya, it seems a good time for policy makers to reflect on the existing EIA legislation with a view to ensuring a more

learning-oriented process [Suškevičs et al., 2019], which would be a critical step towards the sustainable development that the Kenyan Constitution advocates. Kenya could also be a leader in this area, as few jurisdictions have modified their EIA processes to be learning oriented (see Sinclair et al., 2021, forthcoming).

My research findings also suggest the need to reflect on current EIA policy direction and guidelines for post-project audit and monitoring processes to identify ways to include community members in the planning, management, and operation of approved projects – including the follow-up and monitoring of impacts and mitigation measures. In this regard, there is a need for further consideration of the role that community-based monitoring might play. This policy direction is supported by experience in Zimbabwe, where Gwimbi and Ndhamo [2016] describe how follow-up and monitoring in EIA are given little attention, and that the responsibility for carrying them out is largely left with project proponents. Based on my experience, Kenya is no different in this regard -the EIA screening process does not even require public participation in developing the project management plan, never mind in the environment audit and monitoring process.

Lastly, the foundation of the Kenyan EMCA, and especially the EIA provisions, was built on international experience. Many countries have shifted their approach from a rationalistic form of EIA, focused on biophysical concerns and completed through check-box metrics, to a more holistic and integrated way of conducting EIA that promotes, for example, sustainability considerations and meaningful public participation under the banner of impact assessment, as I have outlined in this thesis. Much of the thinking that is part of this newer approach to impact assessment is reflected in requirements of lending organisations like the World Bank. Countries like Kenya, who are leaders in their region and also often receive funding from other countries and international lending organisations, need to consider whether their policies and guidance require updating to at least meet the latest direction from some of these international donors.

8.5 Further research needs

Natural resources are important for their utilitarian values as well as for the cultural survival of many local and indigenous communities where the natural environment is deeply embedded in their way of life [Sowman & Wynberg, 2014]. Sowman and Wynberg [2014] further emphasise the importance of community-based approaches to resource management in Africa, against conventional, centralised governance approaches that carry on the colonial legacy

that has created much of the distrust and inequalities weakening the social fabric of African societies.

Despite the existing skepticism about community-based approaches to NRM [e.g., Schnegg, 2018], my success with implementing a next generation CBEA frame in the Kenyan context indicates that this advanced approach has promising potential in developing countries and elsewhere. More empirical research is needed to further confirm these results and also to draw firmer, more precise direction regarding the feasibility of next generation CBEA for low and medium risk (community-based) projects. In the Kenyan context, support for further work can be found in the Constitution, which emphasises public participation in the management, protection, and conservation of the environment (see section 1.2 in Chapter 1), as well as the protection of indigenous knowledge of biodiversity and the genetic resources of the communities. Further, the CBEA frame I implemented appears to align with and support the national values and principles of governance outlined in Article 10 of the Kenyan Constitution, which emphasises good governance, integrity, transparency, inclusiveness, social justice, and equity.

Sustainability, as shown in Figure 8.1, is an important aspect of the EIA process. The Kenyan constitution (Article 69) as well as the EMCA (1999) emphasise environmental sustainability. The two CBEAs integrated a holistic approach to addressing broader sustainability issues and showed that such an approach is possible without taking undo time. However, there is a need for more empirical evidence regarding the successful integration of sustainability in (community-based) environmental assessment and EIA screening in Kenya and other countries in transition, to show that this is possible.

As suggested above, community-based monitoring, an important part of next generation CBEA, could play an important role in more effective, efficient, and fair EIA screenings in Kenya. Community-based monitoring is proposed as an alternate to conventional follow-up and monitoring approaches, because it is locally adapted, culturally appropriate, and has the capacity to contribute to the efficacy of the process through community involvement and the use of their skills and (indigenous) knowledge [Wilson et al., 2018; McKay & Johnson; 2017]. More research is needed examining how these approaches can be adapted to the local Kenyan context, especially given the great variation in capacity from one community to another and the lack of resources to hire external expertise.

My research findings confirm that the role of the facilitator is important to EIA and to facilitating social learning processes [Ernst, 2019; Suškevičs et al., 2019]. In Kenya the role of the "EIA expert" is paramount in terms of the undertaking of EIA screenings. Future research needs to consider how the sorts of training available to these practitioners, especially in terms of facilitation and building trust through active facilitation. Sandham et al. [2019] indicate that facilitation that builds trust is critical and can even be built by an outsider. This latter point was not my experience in Kenya, and further research is also needed to better understand the role and approach of an outside facilitator.

8.6 Concluding thoughts

Years of colonial rule and post-colonial resource governance have created trust issues between many rural communities and government administration, which I experienced during my research in Kenya. As sustainability is one of the priorities for the Kenyan government, it is time for the administration to adopt a holistic approach to EIA. Public participation is mandatory in environmental assessment in Kenya; however, the quality of participation can be a contentious issue, especially for small-scale development projects. Despite Kenya being in the vanguard of environmental assessment among East African countries, public participation in EIA can be merely a formality in many cases. Regardless of financial assistance provided for their attendance in many (other than EIA) meetings, community members have trust issues with government officers and political leaders. Lack of empathy, as well as of proactive measures among the local speakers (e.g., government officers and local leaders) to engage with rural communities, have further deteriorated the relationships between the Kenyan administration and rural community members. Investing additional time in building participants' capacity while understanding local priorities might help bridge this trust gap. Thus, the role of non-profit or community-based organisations can be significant in fulfilling the demand for additional time and resources that are required for strengthening the capacity of local communities in the pre-CBEA phase. Despite being a foreigner and not knowing the local language, I was able to engage effectively with the CBEA participants and my approach to public participation was a catalyst that enabled the assessment process to be highly participatory without requiring any financial assistance. Staying in the local communities and engaging informally with residents was highly useful in developing rapport and trust.

The implementation of the CBEAs at both case study sites was successful, as the next generation qualities helped bring focus to the process itself rather than just to the outcomes. The integrated approach to sustainability focused on the environmental, social, and economic spheres of development together, as opposed to the conventional approach that emphasises the decoupling of the environmental sphere from the social and economic, or vice versa.

The participation aspect of the CBEAs was far better than other assessment processes I attended in Kenya, and exceeded the standard requirements for public participation in Kenya. Participants were not only involved in assessing the potential project impacts, but also identified mitigation measures that were suited to the local context. Moreover, participants and proponents discussed and developed management plans at the respective sites, where they agreed to share the follow-up and monitoring responsibilities. The entire CBEA process was a learning experience for me as an early career researcher, and helped promote social learning among participants by providing a learning platform that led to positive outcomes. A fully integrated planning and decision-making process, where participants are empowered to make decisions that address sustainability at local, regional, and global levels is yet to be achieved [Sinclair et al., 2018]. Nevertheless, my experience with implementing next generation CBEAs in Kenya achieved most, if not all of the expectations set for them.

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Appendix A

Key informant interview schedule

Date:

Name:
Affiliation (if there is any):
The purpose of this interview is to enrich understanding about community-based approaches to environmental assessment in Sub-Saharan Africa. I have established that you hold expertise in this regard and hope that you will share some of your experience and knowledge with me. This interview schedule is designed to be used with a range of individuals, therefore the relevance of questions may vary.

General Information

- What are the major tools and techniques that you use for the community-based assessment work?
- What major challenges have you faced during this work? For example whether culture or gender are some of the challenges when it comes to any community-based assessment process.
- How do you tackle these issues?
- Could you please explain what role you tend to play in the CBEA process and how the community members contribute in the whole process?

Sustainability Orientation

- In general, are notions of sustainability including sustainability goals considered when you do the CBEA?
- What do you consider besides environment and livelihood when you conduct a CBEA?
- How do you collect information for these?
- Trade-offs are a big issue when considering sustainability. How do you deal with trade-offs among sustainability values while conducting CBEA?

Participatory approaches to decision making

Participatory approach to decision making is another aspect of my framework in which I will be looking at the decision making process.

- Could you please explain the participatory approaches you use during CBEA?
- How do participants engage actively in discourses and discussions during the CBEA?
- Have you had problems with power issues such as influential people trying to control the discussion and if so, how do you neutralise these situation?
- How do you encourage all the participants to participate in the CBEA voluntarily or do you have to provide some kind of incentives?
- What kind of challenges do you face in engaging people from diverse background in the CBEA?

Follow-up and monitoring
Follow-up and monitoring are often neglected in EA. Hence, I have included this aspect in our framework to learn from the practices and how can we address the weaknesses.

- How have you looked to implement follow-up and monitoring in CBEA?
- Who participates in this process and how has responsibility for monitoring been shared?
- How successfully have affected communities been involved in follow-up or monitoring activities?
- Has your organisation ever facilitated the follow-up process and monitored whether the community members participating and able to manage their responsibilities?
- Do you know of situations where the results of follow-up and monitoring were shared with community members? Could you please elaborate?

Learning
Learning, especially social learning is important for community-based projects, which may contribute to managing local resources in a better way. For example, we all learn from our mistakes and try to improve it. I am using the concept of social learning my framework for CBEA. I will focus the process and outcome dimension of social learning.

- How do you incorporate the learning component in the CBEA process?
- In implementing CBEA have you taken any steps to try to encourage learning – either your own or among participants? If so, what steps?
- Do you think the learning from CBEA processes have influenced people's perspectives about the environment their community depends on or sustainability of their community? If so, how?
- Do you consider taking a learning approach is important to CBEA and if so how this might be achieved in a more meaningful away?
- Can you identify any learning outcomes of the CBEA's you have been a part of - for yourself, the community, individual community members?
- What do you feel triggered these learning outcomes?

Can you point me to any CBEA cases that exemplify the sorts of things that you have told me? Do you have any further comments on the practice of CBEA in Sub-Saharan Africa, next generation CBEA and/ or this interview?

Appendix B

Group dialogue schedule

Date:
Total number of participants:
Gender type/ratio:

Preamble:
The purpose of the group dialogue session is to discuss the CBEA implementation process. We will hopefully discuss the entire CBEA process and each participant is encouraged to give their thoughts on the process. This dialogue session is designed to last for about 60 minutes. I will facilitate the process and will do my best to cover each aspect of the CBEA process from the beginning until the end process.

General Information

- How did you find the implementation workshops on CBEA? Were they informative and useful?
- What could have been done to make it better?

- What kind of challenges did you encounter during the implementation phase?

Sustainability

- Did you think incorporating sustainability in the CBEA context is useful?

- What components of sustainability did you find most important to the CBEA in this case environment, human health, community wellbeing (e.g., livelihoods) other?
- Do you think there was appropriate consideration of trade-off issues?
- How was your experience regarding the information collected on sustainability issues?

Participatory approaches

- How was your experience participating in each and every component of the CBEA process?
- Was you participation more effective in some components then others? If so, why?
- What kinds of participatory challenges did you face during the CBEA process?

Follow-up and monitoring
As this component will be useful for the future reference, community members may not necessarily experience follow-up and monitoring immediately during the short period. However, it is important to discuss precisely to get an idea on the role and responsibilities of the participants.

- What do you think of post- CBEA follow-up work that is being proposed for this case?

- Did you find the information on the proposed follow-up and monitoring programs useful and clear?
- Is the role of the community in follow-up and monitoring clear and appropriate? If not, could you please specify what is not clear to you?

Learning

- Do you think the entire CBEA process was a platform for learning by yourself and community members?
- What new things did you learn by participating in the CBEA?
- In what ways did you learn these new things?
- What would you suggest to make the learning through CBEA more effective and efficient?

- Have you, or others, thought about, or taken any collective action, such as for greater sustainability, as a result of the CBEA?

Appendix C

Individual Interview schedule

Date:
Name:
Gender:

The purpose of the interview is to get your views on the CBEA process that you participated in. This semi-structured interview guide contains open ended questions for exploring your experiences during the CBEA.
In the group dialogue session, we discussed the overall experiences of CBEA as a group. This time I will be asking you about your personal experience during the process.

General Information

- How did you find the implementation workshops on CBEA? Were they informative and useful?
- What could have been done to make it better?

- What kind of challenges did you encounter during the implementation phase?

Sustainability

- Did you think incorporating sustainability in the CBEA context was useful?
- What components did you find most important to the CBEA in this case environment, human health, community wellbeing (e.g., livelihoods) other?
- Do you think there was appropriate consideration of trade-off issues?
- How was your experience regarding the information collected on sustainability issues?
- What aspect of data collection was difficult?

Participatory approaches

- How was your experience participating in each and every component of the CBEA process?
- Was you participation more effective in for some components then others? If so, why?
- How do you view the overall CBEA process – was it effective and participatory or not? Could you share the reasons for your response?
- What kinds of participatory challenges did you face during the CBEA process?
- Could you comment what could have done to make the CBEA more participatory or effective?

Follow-up and monitoring
As this component will be useful for the future reference, community members may not necessarily experience follow-up and monitoring immediately during the short period. However, it is important to discuss precisely to get an idea on the role and responsibilities of the participants.

- What do you think of post- CBEA follow-up work that is being proposed for this case?
- Did you find the information on the proposed follow-up and monitoring programs useful and clear?
- Is the role of the community in follow-up and monitoring clear and appropriate? If not, could you please specify what is not clear to you?

Learning

- Do you think the entire CBEA process was a platform for learning by yourself and community members?
- What new things did you learn by participating in the CBEA?
- In what ways did you learn these new things?
- What would you suggest to make the learning through CBEA more effective and efficient?

- Have you, or others, thought about, or taken any collective action, such as for greater sustainability, as a result of the CBEA?

Appendix D

Informed Consent for Group Dialogue

UNIVERSITY OF MANITOBA

Natural Resources Institute
70 Dysart Road, Winnipeg, Manitoba
Canada R3T 2M6
Contact number (+1) 204 4747170
Fax: (+1) 204 2610038
http://umanitoba.ca/institutes/natural_resources/

Title of the research project: Aiming for sustainability: A framework for next-generation community-based environmental assessment
Principal researcher: Rajib Biswal
Natural Resources Institute, University of Manitoba, 310 Sinnott Building, 70 Dysart Road, Winnipeg – MB 3RT 2M6, Canada.
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Email: biswalr@myumanitoba.ca
Faculty Advisor: Dr. John Sinclair
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70 Dysart Road, Winnipeg – MB 3RT 2M6, Canada.
Tel: (+1) 204 4748374 Fax: (+1) 204 2610038
Email: John.Sinclair@umanitoba.ca

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

Project Summary: This study is part of requirements to complete a PhD degree in Natural Resources and Environmental Management, and it is titled, 'Aiming for sustainability: A framework for next-generation community-based environmental assessment'. The purpose of the research is to develop a framework for community-based environmental assessment (CBEA) that incorporates key new principles including sustainability, meaningful public participation, follow-up and monitoring, and learning. In brief, I hope to learn about ways to improve CBEA for local communities but undertaking a case study of one in action.

The specific objectives are: To understand current African CBEA practices; to develop a framework for next generation CBEA; to list some improvements that might be made to CBEA; to test how these might be used in a CBEA; to see if learning among community members results from participating in the CBEA.

The group dialogue will focus on your experience with the advanced CBEA and not an evaluation of the CBEA practitioner(s).

What you are consenting to: You have been asked to consent to your participation in a small group dialogue, which may last approximately 60 – 90 minutes. The group dialogue will be recorded with an audio-recording device if you consent to this, and written notes will be taken during the session. Should you have any negative experience during your participation in the CBEA process, your feedback will be used as a learning lesson for my research on the CBEA and the practitioner will not be responsible for that. You are free to withdraw your consent to participate at any time during the session by notifying the principal researcher. If you choose to withdraw, I will immediately exclude your input from the transcripts. You may withdraw your participation from the research until my dissertation has been submitted, which may take up to two years from the time the fieldwork is completed. All the data will be destroyed by August 2025.

Data gathering and storage:

It is not a requirement for you to identify yourself by your name or any identifiable characteristics that ascertain your identity with the information you provide unless you choose to be acknowledged. In case you choose not to be identified, a pseudonym will be used instead on the transcripts and any reproduction of information you provide. All the recordings and transcribed soft copies will be stored on my computer which is password protected. The hard copies and field notes will be stored in a locked room and will have no access to anyone other than me and my advisor. Confidentiality will be maintained in order to protect the information generated from the data. Data including the hard copies will be destroyed but no later than August 2025. Despite my best efforts to preserve your confidentiality, I cannot guarantee that the other members of the group dialogue will do likewise, but I will ask at the beginning of the small group dialogue that participants keep the discussion among themselves.

Risk and benefits:

This research poses minimal risk to you. No information will be used in a way that poses threat to the integrity and safety of the participants. In case, you are concerned, you may choose not to respond certain question or carefully word your sentence. By agreeing to participate in this research, you will certainly build up some skills and knowledge in conducting assessments at the community level. You will learn different terminologies which will contribute to your understanding on identifying potential impacts of any development initiative within your immediate vicinity.

Expected outcomes: A PhD dissertation, academic publications, and presentations in conferences are the expected outcomes of the research in addition to the practical (next generation CBEA framework) and theoretical (relationship between CBEA and social learning theory) contributions. An oral presentation as well as a photo journal will be developed and will be presented to the community. The photo journal will include the photos taken during the research period, for example, photos of transect walk to the potential research site or photos of

people during meetings or group dialogue etc.. It will be difficult to predict where exactly the photos will be taken – it may be in a church hall or on a project site.
Feedback/ debriefing: At the end of each group dialogue, I will go through the overall summary and my basic understanding of the information. If you decide to review the data, we can find the best possible way to share the data and if at any point you would like to add something new or different you can always inform the researcher.
Further follow-up: Once I complete all dialogues and transcribe those, I may have some follow-up questions. In order to fulfill the requirement, I may contact you either by phone or email for further clarification or any other information I may need.
Questions: If you have any questions either now or in the future regarding this research, please feel free to contact me or my supervisor.
Your signature on this form or the verbal consent indicates that you have understood to your satisfaction the information related to your participation in this research and also all the above-mentioned clauses. This is to inform you that in no ways does this waive your legal rights nor release the researchers or involved institutions from their legal and professional responsibilities. You have the right to withdraw to withdraw from this research at any time and /or refrain from answering any particular question you do not wish to. Your continued participation, however, would be considered as your initial consent. You will be provided with a copy of the consent for your own record.
The University of Manitoba may look at your research records to see that the research is being done in a safe and appropriate way. This research has been approved by the Joint- Faculty Ethics Review Board. If you have any concerns about this project you may contact any of the mentioned persons or the Human Ethics Coordinator at (+1) 204 4747122 or humanethics@umanitoba.ca. For your own records and references, a copy of this informed consent form has been given to you to keep.
Consent: Please indicate which of the following items you agree with:

1. I agree that the researcher is going to take notes during this dialogue.

□ Yes □ No

2. I agree to have the dialogue recorded with an electronic audio recording device.

□ Yes □ No

3. I agree that the researcher may cite my name and directly quote me in future publications. I understand that it will be possible for others to recognise me.

□ Yes □ No

4. I agree that the research may directly quote me with a pseudo name instead of my real name. I understand that others may try to identify the source of information.

□ Yes □ No

5. I agree to be photographed and those photographs will be used for dissemination of findings, such as, presentations, photo journal or academic purposes only.

□ Yes □ No

6. I would prefer to receive a copy of the final report of the research via email: ----------
---

□ Yes □ No

Participant Signature	Date
Participant Signature	Date
Participant Signature	Date
Participant Signature	Date
Participant Signature	Date
Participant Signature	Date
Researcher's signature	Date

Appendix E

Informed Consent for Interviews

UNIVERSITY OF MANITOBA

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Title of the research project: Aiming for sustainability: A framework for next-generation community-based environmental assessment

Principal researcher: Rajib Biswal
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Tel: (+254) [redacted] (Kenya)
Email: biswalr@myumanitoba.ca
Faculty Advisor: Dr. John Sinclair
Natural Resources Institute, University of Manitoba. 306 Sinnott Building,
70 Dysart Road, Winnipeg – MB 3RT 2M6, Canada.
Tel: (+1) 204 4748374 Fax: (+1) 204 2610038
Email: John.Sinclair@umanitoba.ca

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

Project Summary: This study is part of requirements to complete a PhD degree in Natural Resources and Environmental Management, and it is titled, 'Aiming for sustainability: A framework for next-generation community-based environmental assessment'. The purpose of the research is to develop a framework for community-based environmental assessment (CBEA) that incorporates key new principles including sustainability, meaningful public participation, follow-up and monitoring, and learning. In brief, I hope to learn about ways to improve CBEA for local communities but undertaking a case study of one in action.

The specific objectives are: To understand current African CBEA practices; to develop a framework for next generation CBEA; to list some improvements that might be made to CBEA; to test how these might be used in a CBEA; to see if learning among community members results from participating in the CBEA.

The interview will focus on your experience with the advanced CBEA and not an evaluation of the CBEA practitioner(s).

What you are consenting to: You have been asked to consent to your participation in the interviews, which may last from 60 – 90 minutes. Should you have any negative experience during your participation in the CBEA process, your feedback will be used as a learning lesson for my research on the CBEA and the practitioner will not be responsible for that. You are free to withdraw your consent to participate at any time during the interviews by notifying the principal researcher through a telephone call or verbally. If you withdraw from the interview process, your interview transcripts, recordings, and/or handwritten notes will be destroyed. You may withdraw your participation from the research until my dissertation has been submitted, which may take up to two years from the time the fieldwork is completed. All the data will be destroyed by August 2025.

The interview will be recorded with an audio recording device if you agree and give your consent to do the same. If you do not wish to have your interview audio-recorded, notes will be taken manually. The interview may last an hour and a half to complete. The recorded information will be transcribed and analysed with other interviews in order to draw conclusions.

Data gathering and storage:

It is not a requirement for you to identify yourself by your name or any identifiable characteristics that ascertain your identity with the information you provide unless you choose to be acknowledged. In case you choose not to be identified, a pseudonym will be used instead on the transcripts and any reproduction of information you provide. All the recordings and transcribed soft copies will be stored on my computer which is password protected. The hard copies and field notes will be stored in a locked room and will have no access to anyone other than me and my advisor. Confidentiality will be maintained in order to protect the information generated from the data. Data including the hard copies will be destroyed but no later than August 2025.

Risk and benefits:

This research poses minimal risk to you. No information will be used in a way that poses threat to the integrity and safety of the participants. In case, you are concerned, you may choose not to respond certain question or carefully word your sentence. By agreeing to participate in this research, you will certainly build up some skills and knowledge in conducting assessments at the community level. You will learn different terminologies which will contribute to your understanding of identifying potential impacts of any development initiative within your immediate vicinity.

Expected outcomes: A PhD dissertation, academic publications, and presentations in conferences are the expected outcomes of the research in addition to the practical (next generation CBEA framework) and theoretical (relationship between CBEA and social learning theory) contributions. An oral presentation as well as a photo journal will be developed and will

be presented to the community. The photo journal will include the photos taken during the research period, for example, photos of transect walk to the potential research site or photos of people during meetings or group dialogue etc.. It will be difficult to predict where the photos will be taken – it may be in a church hall or on a project site.

Feedback/ debriefing: At the end of each interview, I will quickly go through the overall summary and my basic understanding of the information. If you decide to review the data, we can find the best possible way to share the data and if at any point you would like to add something new or different you can always inform the researcher. If possible and time permits, I will conduct a debriefing session with all the participants from the community prior to my departure.

Further follow-up: Once I complete all my interviews and transcribe those, I may have some follow-up questions. In order to fulfill the requirement, I may contact you either by phone or email for further clarification or any other information I may need.

Questions: If you have any questions either now or in the future regarding this research, please feel free to contact me or my supervisor.

Your signature on this form or the verbal consent indicates that you have understood to your satisfaction the information related to your participation in this research and also all the above-mentioned clauses. This is to inform you that in no ways does this waive your legal rights nor release the researchers or involved institutions from their legal and professional responsibilities. You have the right to withdraw from this research at any time and /or refrain from answering any particular question you do not wish to. Your continued participation, however, would be considered as your initial consent. You will be provided with a copy of the consent form for your own record.

The University of Manitoba may look at your research records to see that the research is being done in a safe and appropriate way. This research has been approved by the Joint- Faculty Ethics Review Board. If you have any concerns about this project you may contact any of the mentioned persons or the Human Ethics Coordinator at (+1) 204 4747122 or humanethics@umanitoba.ca. For your own records and references, a copy of this informed consent form has been given to you to keep.

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

1. I agree that the researcher is going to take notes during this interview.

□ Yes □ No

2. I agree to have the interview recorded with an electronic audio recording device.

□ Yes □ No

3. I agree that the researcher may cite my name and directly quote me in future publications. I understand that it will be possible for others to recognise me.

□ Yes □ No

4. I agree that the research may directly quote me with a pseudo name instead of my real name. I understand that others may try to identify the source of information.

□ Yes □ No

5. I agree to be photographed and those photographs will be used for dissemination of findings, such as, presentations, photo journals and academic purposes only.

□ Yes □ No

6. I would prefer to receive a copy of the transcript of the interview via email: ……..

□ Yes □ No

7. I would prefer to receive a copy of the final report of the research via email: ----------
---

□ Yes □ No

Participant Signature	Date
Researcher's signature	Date

Appendix F

Observation Guide

I will explain to the community members about my observation and seek their prior permission before I start. I aim to participate in various activities within the community and will explain to them about the CBEA and the things I intend to do. My participant observation will be based on the factors relevant to my research. The main areas of observation that I hope to secure, which I will share with the community members, are as follows:

Dynamics within the community

- Activities happening in the community – how they are undertaken and who tends to drive these activities
- Recent projects undertaken
- The interactions among people within the community.
- To understand the nature and extent of formal and informal social networks and connections

Community participation in decision making

- Who actively participate in community decision-making processes and whether others get any opportunity to share their views.

Learning

- New initiatives for community learning and how they were started and operate.
- Approaches taken in community events that may act to encourage individual and social learning (e.g., providing information ahead, organised discussions, etc.)

CBEA

- Enthusiasm among participants during the implementation of CBEA as expressed through their level of engagement in the process by asking questions or making arguments for different priorities, etc.
- The participants who actively engage in the CBEA process (may be useful to observe who are the participants e.g. men/ women etc., who actually engaged in the CBEA process).
- Level of participation in the CBEA activities (For example, were the participants genuinely interested in gaining knowledge on CBEA or were they simply interested in getting the project built to its perceived benefits).
- If people have difficulty in understanding the CBEA activities – particularly those related to my four areas of interest i.e. sustainability, deliberative approach to decision making, follow-up and monitoring.
- What aspect of CBEA (e.g. sustainability, deliberative approach to decision making, follow-up and monitoring) excited the participants most?

Appendix G

THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

Office of the Deputy Vice Chancellor
ACADEMIC AFFAIRS

Our Ref: DVC/ACAD/141/2018

May 28, 2018

NACOSTI

Dear Sir/Madam

RE: INTRODUCTION OF RAJIB BISWAL: PH.D. CANDIDATE

Rajib Biswal from the University of Manitoba, (UM) Canada is affiliated to the Catholic University of Eastern Africa, (CUEA), Department of Geography and Environmental Studies as a visiting Ph.D. candidate under a partnership arrangement between the two universities – UM and CUEA.

Biswal wishes to carry out his research in Kenya from July, 2018 to July 2019. His Research Title is "Aiming for Sustainability: A Framework for next generation Environmental Assessment" to be undertaken in Kilifi, Nyeri, Kitui, Machakos and Makueni Counties.

Dr. Frida Nyiva Mutui (CUEA) of the Department of Geography Environmental Studies is the local supervisor during his research wok in Kenya.

Gratefully accord him the necessary courtesies and support.

Sincerely yours,

[redacted]

Prof. Kaku Sagary Nokoe
Deputy Vice-Chancellor Academic Affairs

THE CATHOLIC UNIVERSITY OF EASTERN AFRICA (CUEA) P.O. BOX 62157 00200 Nairobi – KENYA
Tel: 020-2525811-5, 8890023-4, Fax: 8891084, Email: deanfassc@cuea.edu, Website: www.cuea.edu
Founded in 1984 by AMECEA (Association of the Member Episcopal Conference in Eastern Africa)

Appendix H

THIS IS TO CERTIFY THAT:
MR. RAJIB LOCHAN BISWAL
of UNIVERSITY OF MANITOBA, 220 Sinnott Building, 70 Dysart Road-R3T 2M6 Winnipeg,has been permitted to conduct research in *Embu, Homabay, Kajiado, Kakamega, Kilifi, Kirinyaga, Kitui , Machakos, Makueni, Meru, Murang'a, Nyandarua, Nyeri ,Samburu, Tharaka Nithi, Counties*

on the topic: *AIMING FOR SUSTAINABILITY: A FRAMEWORK FOR NEXT GENERATION COMMUNITY-BASED ENVIRONMENTAL ASSESSMENT*

for the period ending:
14th September,2019

Permit No : NACOSTI/P/18/30284/24565
Date Of Issue : 26th February,2019
Fee Recieved :USD 400

.....
Applicant's Signature

[redacted]
.....
Director General
National Commission for Science, Technology & Innovation

Appendix I

NEMA Questionnaire

Centre for Climate Change and Sustainable Development Ltd

GAKAKI WATER AND IRRIGATION PROJECT

To comply with the environmental impact assessment and audit regulation of 2003 and Emca 2016,Gakaki Self group intends to carry out an environmental impact assessment to evaluate the impacts of the proposed Gakaki Water and irrigation project You are therefore kindly requested to answer this questionnaire to enable the project achieve its objective

Any information given will be handled with a high level of confidentiality.

Thanks in advance.

Name of the Interviewer MOSES

Date of interview 15/01/2019

Gender Female

Respondent Name/Title (optional) AGATA GACHAMBI (Leah K. Mwangi Assistant)

1 Please describe the project, Name, location, objective and extend

Gakaki water and irrigation project
Location: Murang'a county, Kahuro sub county
Gatuya location.
To provide water to the community for irrigation.

2 In your view is the project location susceptible to earthquakes, flooding, and landslides, erosion or extreme adverse climatic conditions

No. The project is well located ~~an~~ as assessment was done before construction of current projects.

3 Are there any plans for future land uses on or around the project location which could be affected by the project?

No. Binding agreement is done and documentation is present incase of conflicts due to land use.

4 What are the benefits of this project to the community and the county at large?

1

1. Enough food supply.
2. Health has improved.
3. Increase in income
4. Diverse food farming.
5. Good and enough water supply for future generation.

5 What are the expected impacts both positive and negative of this project?

POSITIVE

Bio-physical impacts

Trees have been planted and mulching is done to prevent the soil from drying. Increased vegetation and intense farming has been carried out to prevent soil erosion.

Socio-economic impacts

Increase in income as farmers grow crops and sell them to the market.

Improved health as people feed on different species of food.

NEGATIVE

Bio-physical impacts

Infertility of soil due to excess use of fertilisers and chemicals.

Water pollution due to use of ~~pats~~ chemicals to treat it.

Socio-economic impacts

Misuse of money ~~a~~leading to increase in drug intake.

Decreased living standards for future generation as the current generation will misuse money leaving none for future generation.

6 What measures do propose to mitigate against the above listed negative impacts?

1. Alternate supply of water by the Gakaki management to the community.
2. Report immediate leakages to the Gakaki ~~community~~ management or plumber employed by the Gakaki management.
3. People/community should be well educated on how to use water efficiently.