

**ASSESSMENT OF BENEFICIARIES' PERCEPTIONS OF THE POST-
IMPLEMENTATION STAGES AND SUSTAINABILITY OF SLUM UPGRADING IN
NAKURU CITY AND KITALE TOWN, KENYA**

LUGAIRI ESTONE

**A Thesis Submitted to the Graduate School in Partial Fulfillment of the Requirements
for the Doctor of Philosophy Degree in Geography of Egerton University**

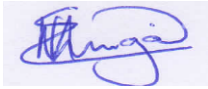
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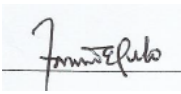
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DEDICATION

In honour of the Almighty God for granting me the strength, will, and capacity to undertake my Doctorate studies. I dedicated this thesis to my wife (Rose Walubengo) and my Children (Gael, Leon, and Jeremy) for their love, care, guidance, encouragement, and unwavering support during the entire period.

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Second, I would like to acknowledge all the study respondents for taking time off their busy domestic, business, personal, and/or office schedules to attend to my research needs. They included the sampled project beneficiaries of the IUHP and BiP: PUP projects, the 24 representatives of local CBOs, the Project Manager from ITDG-EA (Mr. Mwanzia), and the two County Officers for Urban Development of Nakuru and Trans Nzoia County Governments. I want to extend special thanks and gratitude to Mr. Mwanzia, the then Project Manager from ITDG-EA in the Nakuru Office. Mwanzia was very patient with me in providing information and relevant documents about the two slum upgrading projects under review. He also introduced me to the officials of local CBOs affiliated with the two projects. In the secondary city of Nakuru, I am grateful to Madam British, a village elder in the Lake View project site, and Mzee Joel Mbutura, one of the officials of the umbrella body of local CBOs – NAHECO, for guiding the research team in identifying and locating the respondents for interviews. For the case of Kitale, I acknowledge the support of James Amukaya and Joe Kamau, Chairman and Secretary, respectively, of the umbrella body of CBOs - KIHECO for assisting with logistical arrangements in identifying and locating the respondents. The support of these individuals made data collection enjoyable and efficient within the allocated time.

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God Bless all of you.

ABSTRACT

Kenya has embraced slum upgrading as a development strategy to address increasing urban slum population in order to formalize and integrate slums into the overall urban framework. However, most of the available studies did not address sustainability of the interventions, and disproportionately focused on primary cities compared to secondary cities. This study sought to assess beneficiaries' perception of the post-implementation and sustainability of the Integrated Urban Housing Project in Nakuru and the Building in Partnership: Participatory Urban Planning project in Kitale. Specifically, the study assessed the level of participation in post-implementation and sustainability; determined the influence of participation in post-implementation on sustainability; and assessed the perception of beneficiaries about impact on the living conditions and livelihoods. The study was anchored on the Theory of Change and Sustainable Livelihood Framework, It adopted a multiple case study research design and targeted 7261 project beneficiaries, Project Manager, 2 County Urban Development Officers, and 193 officials of local community-based organizations. A sample of 392 respondents was selected comprising of 365 beneficiaries, 2 County Urban Development Officers, 1 Project Manager, and 24 officials. Primary data were collected using semi-structured questionnaire, key in-depth interview, focus group discussion and field observation. Secondary data from existing relevant documented sources was also collected. The quantitative and qualitative data were analyzed using descriptive and inferential statistics, and thematic analysis, respectively. The study found a significant difference in beneficiary participation in the post-implementation stages between the two projects ($t_{156} = 5.426, p = 0.000$ for ex-post monitoring and evaluation and $t_{189} = 3.610, p = 0.000$ for ex-post maintenance). There was a significant difference in the level of sustainability of the two projects ($t_{358} = 2.419, p = 0.016$). Participation in post-implementation stages significantly influenced sustainability ($F_{2,120} = 187.807, p = 0.000$). There was no significant difference in beneficiary perception of the impact on the living conditions ($t_{358} = 0.474, p = 0.636$). There was a significant difference in beneficiary perception of the impact of the two projects on the livelihoods ($t_{358} = 7.955, p = 0.000$). Based on these key findings, it is concluded that the two projects were sustainable 15 years after completion and that the beneficiaries actively participated in post-implementation stages. The study recommends that local authorities and external agencies should encourage interventions that directly benefits slum dwellers to boost their motivation to participate in the post-implementation stages.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABT:	Alternative Building Technologies
BiP: PUP:	Building in Partnership: Participatory Urban Planning
CBO:	Community-Based Organization
CPI:	Community Participation Index
DFID:	Department for International Development of United Kingdom
FGD:	Focus Group Discussion
GoK:	Government of Kenya
IGAs:	Income Generating Activities
ITDG-EA:	Intermediate Technology Development Group – Eastern Africa
ITDG-UK:	Intermediate Technology Development Group – United Kingdom
IUHP:	Integrated Urban Housing Project
KENSUP:	Kenya Slum Upgrading Project
KES:	Kenya Shillings
KIHBS:	Kenya Integrated Household Budget Survey
KIHECO:	Kitale Affordable Housing and Environment Committee
KISIP:	Kenya Informal Settlement Improvement Programme
KMC:	Kitale Municipal Council
KNBS:	Kenya National Bureau of Statistics
MDGs:	Millennium Development Goals
MCN:	Municipal Council of Nakuru
NAHECO:	Nakuru Affordable Housing and Environment Committee
NGO:	Non-Governmental Organization
SACCO:	Savings and Credit Cooperative Organization
SDGs:	Sustainable Development Goals
SLF/SLA:	Sustainable Livelihoods Framework/Approach
SSA:	sub-Saharan Africa
SSB:	Stabilized Soil Blocks
SPSS:	Statistical Package for Social Science
UDDT:	Urine Diversion Dehydration Toilet
UN-DESA:	United Nations Department of Economic and Social Affairs
UN-Habitat:	United Nations Human Settlements Programme

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The United Nations Department of Economic and Social Affairs – UN-DESA (2020) estimated that 56.2% of the global population (about 4.4 billion people) lived in urban areas in the year 2020, and projected to rise further to 60.4% (about 5.2 billion people) by 2030. At least 94.0% of this growth would occur in developing countries of Asia and Africa with Asia taking the highest quantity, while Africa will host the highest proportion of new urban dwellers (Ganz, 2020; UN-DESA, 2018; World Bank, 2016). In addition, sub-Saharan Africa (SSA) is the fastest urbanizing region in the world with an annual growth rate of 4.1%, compared to a global rate of 2.0% (Githira et al., 2020; Saghir & Santoro, 2018; UN-DESA, 2018; World Bank, 2016). However, despite this increase in urban population, urban areas occupy only 5% of the landmass of the world while accounting for an estimated 70.0% of economic activity, 60.0% of energy consumption, 70.0% of global waste and 70.0% of greenhouse gas emissions (Avis, 2016).

The rapid increase in urban population coupled with escalating poverty, exclusion, inequalities and inadequate institutional capacity have compromised the ability of many states in developing countries to provide equitable access to basic services and infrastructure (Christen & Kanbur, 2016; Cities Alliance, 2019; Roberts, 2019; Turgel, 2018; Turok et al., 2017). This has in turn contributed to the proliferation and expansion of slum and informal settlements (Blankespoor et al., 2016; Cities Alliance, 2021a, 2021b). The absolute slum population increased from 928 million in 2014 (23.0%) to about 1.03 billion in 2018 (24.0%) and further estimated to exceed 1.2 billion people by 2030 (UN-Habitat, 2020a). Despite being the least urbanized region, 56.5% of urban population in SSA lived in slum and informal settlements in 2018 (Alaazi & Aganah, 2019; UN, 2018, 2020; UN-Habitat, 2020a).

Kenya, as a typical developing country in SSA, experiences rapidly increasing urban and slum populations (UN-Habitat, 2020b; World Urbanization Prospect – WUP, 2018). The 2019 Population and Housing Census indicate that 31.1% of its population lived in urban areas (KNBS, 2019a). In the year 2014, at least 56.0% of the urban population lived in slum and

informal settlements with an annual growth rate of 5.88% (UN-Habitat, 2016; WUP, 2018). The Kenya Integrated Household Budget Survey (KIHBS) adds that urban inequality in the country, measured by a Gini Coefficient of 0.568, was high (above the unacceptable inequality threshold of 0.4) compared to the national rates of 0.408 in 2015, and 0.416 in 2018 (KNBS, 2019a).

The expanding and deteriorating slum settlements are a growing challenge to the social and economic development of urban areas globally (UN-Habitat, 2010). As a result, improving living conditions and livelihoods in slums remains high on the global agenda (Perlman, 2010; UN-Habitat, 2010). A number of the United Nations-sponsored Sustainable Development Goals (SDGs) seeks to address various challenges affecting slum settlements. Specifically, SDG 11 seeks to “*Make cities and human settlements inclusive, safe, resilient and sustainable,*” through Target 11.1 - “*By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.*” The indicator 11.1.1 is about the “*Proportion of urban population living in slums, informal settlements or inadequate housing.*” This is in addition to SDG 1 (End poverty in all its forms everywhere), SDG 6 (Ensure availability and sustainable management of water and sanitation for all) and SDG 10 (Reduce income inequalities within and among countries) (UN, 2020; UN-Habitat, 2021a). The United Nations also adopted a New Urban Agenda at the Habitat III conference in Quito, Ecuador, in October of 2016 as a blueprint for the achievement of sustainable urbanization through slum upgrading through improvement of access to safe and affordable housing with basic services by 2030 (UN, 2017).

States worldwide have experimented with diverse response strategies to address the expanding slum settlement since the 1960s (Mansuri & Rao, 2013; UN-Habitat, 2003a). The traditional strategies adopted in 1960s and 1970s included benign neglect, forced eviction and demolition (slum clearance), and slum resettlement (UN-Habitat, 2003a). Over time, international experiences indicated that these top-down interventions were unsustainable and failed to address the root causes of slum settlement (Buckley & Kalarickal, 2005; Hernandez, 2008; UN-Habitat, 2003a). Thus, in 1980s, the strategy changed to one emphasizing gradual improvement for formalization and integration of slum settlements into the overall urban framework through slum upgrading (Cities Alliance, 2021a, 2021b; Okyere et al., 2016; UN-DESA, 2020). The aim is to

reverse the five characteristics of a slum settlement by improving living conditions and strengthening the livelihoods of slum dwellers (Cities Alliances, 2016; UN-Habitat, 2019).

The Government of Kenya has embraced slum upgrading in line with objectives of the SDG 1, 6, 10 and 11 (11.1), Kenya Vision 2030, and Big Four Action Plan Transformation Agenda of 2017. The most recent nationwide frameworks are the Kenya Slum Upgrading Programme (KENSUP) of 2005 and Kenya Informal Settlements Improvement Project (KISIP) of 2011 (Anderson & Mwelu, 2013; GoK, 2007; UN-Habitat, 2008). The two were collaborative initiatives between the Government of Kenya and UN-Habitat (GoK, 2007) aimed at improving the living conditions and livelihoods in slums by the year 2020 (Anderson & Mwelu, 2013; Archambault et al., 2012; Huchzermeyer, 2012; Muraguri, 2011). In addition, the Big Four Action Plan Transformation Agenda by the government prioritized construction of 500,000 affordable housing units in urban areas for low-income earners using innovative and affordable building technologies between 2017 and 2022 (GoK, 2017).

Despite divergent opinions (Okyere et al., 2016), slum upgrading is highly favoured and has proven to be useful in fostering community-led and integrated development interventions (UN-DESA, 2020; UN-Habitat, 2019). Several evaluation studies conducted globally on slum upgrading indicate varied positive impacts (World Bank, 2009) attributed to political commitment to large-scale slum upgrading through legal and regulatory reforms (Mansouri & Rao, 2013; UN-Habitat, 2006). However, most studies are end-of-project evaluations with less attention on sustainability of the interventions (Arora, 2019; Barakat et al., 2020; Doe et al., 2020; Dutt et al., 2019; Saad et al., 2019; Sharma et al., 2020).

Studies indicate that sustainability of slum upgrading is contingent upon effective post-implementation stages and participation of targeted beneficiaries in the process (Cities Alliance, 2021a; Kwena, 2021; Luvenga et al., 2015). The post-implementation monitoring and evaluation, and maintenance focus on continuity and preservation of the implemented interventions (Kwena, 2021; Mahonge, 2013). The targeted beneficiaries play a critical role with the highest responsibility and powers to decide whether to continue, preserve and maintain implemented

interventions or not (Danso-Wiredu & Midheme, 2017; Kwena, 2021; Noori, 2017; Seokwoo et al., 2020). This is especially the case since slum upgrading is a spatially localized action that requires a local public response, relevance of local knowledge, and good communication and sharing local knowledge. Beneficiaries are intrinsically motivated to ensure sustainability of interventions that benefit them (Cities Alliance, 2021b; Danso-Wiredu & Midheme, 2017) and as such, their perceptions of the post-implementation and sustainability are important. However, a number of studies have attributed failure of community development projects, including slum upgrading, to inefficient post-implementation monitoring and evaluation, and maintenance and lack of or inadequate participation of beneficiaries in the process (Barnes et al., 2014; Ndou, 2012).

In addition, many of urban development researches, policy attention, and governance interventions have tended to focus more on primary and mega cities globally (Githira, et al., 2020). This is despite statistical evidence indicating that secondary cities and towns are epicenters of urban growth, especially in developing countries (Blankespoor et al., 2016; Marais et al., 2016). This disproportionate focus has resulted in polarizing effects with growing gaps in physical and socio-economic development between primary and secondary cities. This situation has created spatial and socio-economic inequalities and deprivations in secondary cities and towns (Christiansen & Kanbur, 2016; Githira et al., 2020). The secondary cities have limited resources in terms of policy attention, capacity, governance, and finance, all of which have resulted in poorly integrated, badly designed, and weak urban systems. This has in turn contributed to limited investment in infrastructure and urban services and further increased disparities in comparison to primary cities (Christiansen & Kanbur, 2016; Marais et al., 2016; Roberts, 2019). Thus, there is need for an improved understanding of the attributes of urban systems of secondary cities to create a framework for adoption of effective strategies (Githira et al., 2020; Marais et al., 2016; Turgel, 2018).

In Kenya, the rapid growth in slum population in secondary cities in Kenya was a matter of great concern that required urgent and long-lasting solutions. However, there has been a disproportionate policy and research attention on primary cities of Nairobi, Mombasa, and

Kisumu. This is despite statistical evidence indicating that secondary cities in the country such as Nyeri, Eldoret, Kakamega, Embu, **Kitale**, and **Nakuru**¹, growing at a faster rate and experiencing similar challenges as those of the primary cities (Majale, 2009). For example, secondary cities of Nakuru and Kitale experienced unique increase in slum population in recent years resulting from recurrent violent political and cultural conflicts and drought in the surrounding regions. The two have frequently served as refuge centres for victims with majority of them settling in the sprawling slum and informal settlements (GoK, 2010; Majale, 2009). As a result, about 70.0% of the population in Nakuru and 65.0% in Kitale lived in densely populated slum and informal settlements (KNBS, 2019).

The secondary cities of Nakuru and Kitale had adopted slum upgrading to address the challenges of increasing slum population. For example, Nakuru hosted the Integrated Urban Housing Project (IUHP), implemented between April 1999 and September 2003 with support from a Non-Governmental Organization (NGO) known as Intermediate Technology Development Group – Eastern Africa (ITDG² – EA). The objective was to increase access to adequate, safe, and secure shelter by lowering the cost of house construction through appropriate technological interventions and promotion of sustainable income-generating activities (IGAs) (ITDG-EA, 2003). Kitale hosted the Building in Partnership: Participatory Urban Planning (BiP: PUP) project implemented between April 2001 and March 2004 supported by the same ITDG – EA. The objective was to develop, test, and disseminate approaches and methodologies encouraging active participation and partnership of key stakeholders in assessing community needs and developing sustainable upgrading interventions using neighbourhood plans (Majale, 2009). The end-of-project evaluations indicates that the IUHP and BiP: PUP projects benefited approximately 7261 directly in terms of improved access to basic services, income generation opportunities, low-cost housing, capacity building, and empowerment (Chege & Akall, 2006;

¹ Nakuru was elevated from a secondary city and awarded a city charter as the fourth primary city in Kenya on 1st of December, 2021. This was two years after data used in this study collected and analyzed (September – November 2019). Therefore, this study and its findings refers to Nakuru as a secondary city at the time of data collection, analysis and report writing.

² ITDG is an international NGO that encourages the use of technology in empowering people through community driven solutions. In July 2005, ITDG changed its name to Practical Action.

ITDG–EA, 2003; Majale, 2009;). However, evaluation studies of the two projects did not address issues of post-implementation stages and sustainability of the implemented interventions of the two projects (Barnes et al., 2014; Chenga et al., 2006; Luvenga et al., 2015; Ndou, 2012).

1.2 Statement of the Problem

The rapid growth in slum population in secondary cities in Kenya was a matter of great concern that required urgent and long-lasting solutions. Since the year 2000, the country had embraced slum upgrading as a development strategy to improve the living conditions and livelihoods of slums, and to formalize and integrate these settlements into the overall urban framework. However, most of the available studies indicate that although slum upgrading was a noble strategy, many of the interventions were small-scale, stand-alone, pilot in nature, and innovative practices largely uncoordinated and not necessarily sustainable. These studies were end-of-project evaluations, which did not address post-implementation stages and sustainability of slum upgrading, and the role of the project beneficiaries. This was the reasons for continued formation, existence and expansion of slum settlements as the targeted neighbourhoods regress back within a short period. This makes it imperative for stakeholders to come up with strategies to improve sustainability of slum upgrading by assessing its linkage to post-implementation stages and beneficiary participation. The assessment of post-implementation stages and sustainability can only succeed when undertaken through the perceptions of project beneficiaries who are the primary consumers with the highest responsibility and intrinsic motivation to maintain and sustain beneficial interventions. Further, majority of the available studies and policy attention had disproportionately focused more on primary cities of Nairobi, Kisumu, and Mombasa compared to secondary cities such as Nakuru (see Footnote 1) and Kitale, thereby contributing to their neglect, stagnation, and decline. This raised questions about the perceptions of project beneficiaries regarding their participation in post-implementation stages and its influence on sustainability of slum upgrading in secondary cities in Kenya. This was the knowledge gap that this study attempted to fill using two case studies of slum upgrading interventions in secondary cities of Nakuru and Kitale implemented and completed 15 years ago.

1.3 Objectives of the Study

This section presents the broad and specific objectives that guided the study.

1.3.1 Broad Objective

This study sought to provide an understanding of the nexus between post-implementation stages and sustainability of slum upgrading through the perceptions of the targeted project beneficiaries in selected secondary cities using case studies of the IUHP from Nakuru and BiP: PUP project from Kitale, Kenya.

1.3.2 Specific Objectives

The specific objectives of the study included:

- i) To assess the level of community participation in the post-implementation monitoring and evaluation, and maintenance of the IUHP and BiP: PUP projects as perceived by the project beneficiaries.
- ii) To assess the level of sustainability of the IUHP and BiP: PUP projects implemented 15 years ago as perceived by the project beneficiaries.
- iii) To determine the influence of community participation in the post-implementation monitoring and evaluation, and maintenance on sustainability of the IUHP and BiP: PUP projects through the perceptions of project beneficiaries.
- iv) To assess the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the living conditions in the selected slum settlements.
- v) To assess the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the livelihoods in the selected slum settlements.

1.4 Study Hypotheses

To achieve the specific objectives, the study tested the following null hypotheses:

- H₀₁: There was no statistically significant difference in the level of community participation in the post-implementation monitoring and evaluation, and maintenance between the two projects as perceived by the project beneficiaries.
- H₀₂: There was no statistically significant difference in the level of sustainability of slum upgrading between the two projects as perceived by the project beneficiaries.

- H₀₃: Community participation in the post-implementation monitoring and evaluation, and maintenance had no statistically significant influence on sustainability of the two projects as perceived by the project beneficiaries.
- H₀₄: There was no statistically significant difference in the perception of the beneficiaries about the impact of slum upgrading on the living conditions of slum settlements between the two projects.
- H₀₅: There was no statistically significant difference in the perception of the beneficiaries about the impact of slum upgrading on the livelihoods of slum dwellers between the two projects.

1.5 Justification of the Study

The deteriorating living conditions in slum settlements in secondary cities in Kenya was a pressing challenge that needs an urgent, adequate, and sustainable response from all concerned stakeholders. Since earlier 2000s, there had been a growing momentum by various stakeholders to improve slum living conditions and livelihoods through slum upgrading. There are several slum upgrading interventions implemented with varied results. However, most of these interventions had failed to address the issue of post-implementation stages and sustainability, especially through the perceptions of the target beneficiaries. This provided a research gap for this study using case studies of slum upgrading in secondary cities of Nakuru and Kitale, Kenya.

Although slum upgrading was a spatially localized and unique action, which cannot be utilized to make generalizations and conclusions, lessons learnt from this study could contribute to a better understanding of the post-implementation stages and sustainability of slum upgrading interventions through the perceptions of target beneficiaries. The findings of this study are significant to slum dwellers, government, donors, policy makers and researchers. The study demonstrated the critical role of slum dwellers in post-implementation stages and sustainability as primary beneficiaries and consumers of slum upgrading interventions. Therefore, slum dwellers may use these findings to justify their inclusion and active involvement in post-project period of slum upgrading. They will understand the need to assume ownership and responsibility of post-implementation stages in order to maintain guaranteed benefits from the interventions.

The findings may contribute to policy debates and advocacy on the nexus between post-implementation stages and sustainability of slum upgrading and the role of beneficiary participation in the process. Understanding the perspectives of the project beneficiaries and their perceptions of the sustainability and impact is valuable for the external agencies developing and designing future interventions, which aim at improving the living conditions and livelihoods.

Further, the findings demonstrated that through participatory slum upgrading, secondary cities could make a significant progress towards achieving various targets of multiple SDGs, which seeks to end poverty, promote good health and well-being, promote access to improved water and sanitation, reduce inequalities, and build sustainable cities. For example, by focusing on access to low-cost housing through alternative building technologies (ABTs), the two projects significantly contributed to SDG 11 (Target 11.1), which seeks to ensure access for all, to adequate, safe and affordable housing and basic services. In addition, through capacity building and empowerment of slum dwellers in form of promotion of IGAs, sustainable slum upgrading could contribute to achievement SDG 1 which seeks to reduce poverty in slum settlements, and SDG 10 that aim at reducing inequalities. Increased access to improve water and sanitation would go a long way in meeting SDG 6. The aim is to achieve the UN-Habitat New Urban Agenda of improving living conditions and strengthening the livelihoods of slum dwellers by reversing the five characteristics of a slum settlement by the year 2030 through sustainable slum upgrading. The findings also demonstrated that through upscaling adoption of low-cost ABTs and promotion of IGAs, the country could progressively realize its Big Four Action Plan Transformation Agenda of improved access to affordable housing in slum settlements.

Furthermore, the findings add value to existing limited knowledge of conceptualization and measurement of post-implementation and sustainability of slum upgrading through the perceptions of project beneficiaries who are primary consumers of implemented interventions. The findings also bring out the role of non-state actors in slum upgrading in terms of their strength and limitations. The knowledge gained may supplement national surveys and other sources of data on post-implementation stages and sustainability of slum upgrading and the need for community participation. As part of academic pursuit, the study contributes to the existing

body of knowledge in urban geography, specifically sustainable urban planning and management. The findings expands frontiers of literature by assessing beneficiaries' perception of post-implementation and sustainability of slum upgrading in secondary cities.

1.6 Assumptions of the Study

The following assumptions informed the study:

- i) The targeted beneficiaries were still living in the project sites and willing to provide information about the two slum upgrading projects.
- ii) The project beneficiaries were aware of and participated in post-implementation stages of monitoring and evaluation, and maintenance of slum upgrading projects.
- iii) The two projects were sustainable 15 years after implementation and completion due to active beneficiary participation in post-implementation stages
- iv) There were various challenges affecting beneficiary participation in the post-implementation stages and sustainability of slum upgrading.
- v) The project beneficiaries perceived high (positive) impact of the two slum upgrading projects on the living conditions and livelihoods in the project sites.

1.7 Scope of the Study

The study was conducted in selected slum areas in two secondary cities in Kenya namely Nakuru and Kitale. The two secondary cities experienced increasing slum population where about 70.0% of the population in Nakuru and 65.0% in Kitale lived in densely populated slum and informal settlements. As a result, the two cities hosted slum upgrading facilitated by an NGO known as ITDG-EA. Nakuru had the IUHP implemented between April 1999 and September 2003, while Kitale had BiP: PUP project implemented between April 2001 and March 2004. Therefore, the study based the selection of the two cities on their high and increasing slum population and evidence of participatory slum upgrading interventions. The two study projects had been fully implemented and thus appropriate for the objectives of this study.

The funding NGO selected three slum areas (project sites) from each secondary city for upgrading namely: Kwa Rhonda, Lake View, and Bondeni from Nakuru; and Kipsongo, Shimo-

La-Tewa, and Tuwan from Kitale. The NGO implemented the two projects within the same period and with similar objectives and strategies. This made data collection, analysis, and comparison of the findings easier. As a result, the IUHP and BiP: PUP projects formed the focus of this study with the six project sites used as the study sites. The two projects had specific target beneficiaries who were included in the study. Thus, the study was limited to the two projects and sought the views of the specific target project beneficiaries and their perceptions about post-implementation and sustainability of the interventions. The study used targeted project beneficiaries as units of observation and the two projects as the units of analysis.

The study conceptualized sustainability as the long-term viability of a complete and implemented the IUHP and BiP: PUP projects to continue and maintain their activities and benefits beyond the project-period and/or after exit and reduction of major funding and support from the ITDG-EA. The study assessed sustainability of the two projects 15 years since after completion and implementation. Post-implementation stages referred to post-project period of monitoring and evaluation, and maintenance of the activities and benefits of the implemented interventions. The study assessed sustainability and participation in post-implementation stages from the perceptions of project beneficiaries as primary consumers of the interventions with intrinsic motivation and responsibility to maintain implemented interventions. This study collected data in September and November 2019.

1.8 Limitations of the Study

Several limitations with the potentials of impeding achievement of the objectives of this study were encountered. However, the study implemented a number of measures to overcome the limitations and ensure validity of the findings of the study.

This study was conducted 15 years after completion of the two projects under review. Initially, the time lapse was a challenge in terms of identification and location of project beneficiaries and other stakeholders involved. However, the study countered this limitation by seeking assistance from the ITDG-EA, which helped in identification and location of the beneficiaries. The Project Manager from the ITDG-EA linked the researcher with the leadership of various local

community-based organizations (CBOs) that participated in the two projects. The majority of the CBOs were still active and operational in the project sites. The connected leaders of CBOs provided a list of members (project beneficiaries) who were still present and their contacts, which formed the sampling frame for the study.

The study established that some of the targeted beneficiaries had relocated within and outside the project sites, while others were absent through natural attrition. This limited the use of probability sampling procedures to select the respondents. However, the study overcame this limitation using snowball sampling. The identified leaders of local CBOs used social referrals and networks to identify and trace the respondents.

Slums are unique in social, historical, economic, and political contexts. These factors affect the nature of interventions adopted and the expected results. As a result, a particular challenge may manifest differently across different slum settlements and require unique interventions, which may limit the extent of generalization of the findings. However, this study used two projects from two secondary cities implemented within the same period, with similar objectives and strategies, and facilitated by the same NGO - ITDG-EA. This allowed comparison of the results from the two projects

The high levels of poverty and limited economic opportunities in the study sites had forced some residents to engage in informal and illegal activities to earn a living. This created suspicion among some of the residents about the presence of the research team and intention of the study. This was more common in Kipsongo project site of the BiP: PUP project, which was largely a squatter settlement with a high level of poverty, insecurity, and illegal activities such as drug peddling and illicit brew. Some of the residents were apprehensive of “foreigners” (the research team) traversing through the settlement carrying writing materials and cameras. They were not happy with the research team talking to (interviewing) only certain specific residents (identified project beneficiaries) and taking photographs. This threatened the security and safety of the research team and almost stalled the data collection on the first day. However, the study overcame this limitation using leaders of CBOs who explained the intention of the study to

residents. Some of the leaders also accompanied the research assistants in visiting identified respondents for interviews.

There was also the issue of high false expectations among respondents about potential benefits from the study. Some assumed that there was a link between this study and a possible return of the ITDG-EA in the project sites. The situation was made complicated by the role of the Project Manager from the ITDG-EA who linked the research team with leaders of local CBOs. As a result, some thought that the research team was from the ITDG-EA and that the NGO was using the study to prepare for a comeback. They assumed that interviewed residents would have an advantage in forming the next set of beneficiaries. Thus, many residents wanted to participate in the study regardless of not meeting the criteria. To overcome this limitation, the research team and leaders of CBOs regularly explained the intention of the study and criteria of selection of the respondents.

1.9 Definition of Terms

The study presents the following operational and conceptual definitions of terms:

Beneficiary: This refers to any person who directly benefited from the activities of the two slum upgrading projects under review, that is, the IUHP and BiP: PUP projects. Such persons included slum dwellers in the selected six project sites directly targeted by activities of the two projects. The study identified them from the list of membership provided by leaders of CBOs affiliated to the two projects.

Community: This refers to the local slum residents in the selected six project sites covered by the IUHP and BiP: PUP projects who shared common interests and needs in terms of deprivations, and jointly targeted by activities of the two projects.

Community (beneficiary) participation: This is a process of active involvement of targeted project beneficiaries from six-selected project sites in influencing the decisions, direction, and execution of post-implementation monitoring and evaluation, and maintenance of the IUHP and BiP: PUP projects. The study measured the level of beneficiary participation on a five-point Likert scale ranging from 1 to 5, representing a continuum from passive to active participation. The study based the measurement on perceptions of sample beneficiaries about their participation in various indicators of the post-implementation monitoring and evaluation, and maintenance of the two projects. The study aggregated individual scores of all the indicators of each stage into a single composite index score for each respondent known as a Community Participation Index (CPI). The higher the CPI score, the higher was the level of participation in post-implementation stages as perceived by sampled beneficiaries, and vice versa. The study transformed the CPI score into three ordinal categories namely low, average, and high participation, to facilitate differentiation between perceived levels of participation among sample beneficiaries.

Impact: This refers to the ultimate consequences (results) or higher-level goals contributed by the IUHP and BiP: PUP projects in the achievement of their overall objective in the post-project period. The study adopted the criteria set by UN (2010) and UN-Habitat (2003a; 2009) of measuring the impact of slum upgrading by extent to which the two projects addressed the living conditions (key characteristics of slum settlement in the project sites) and livelihoods as perceived by project beneficiaries. The perceived impact was

measured on a on a five-point Likert scale ranging from 1 to 5 ranging from 0 to 4, representing a continuum from no impact to very high impact between pre-project and post-project periods

Livelihood strategy: This is a combination and use of assets and opportunities influenced by the activities of the IUHP and BiP: PUP projects to pursue or achieve beneficial livelihood outcomes. The sample beneficiaries identified their livelihood strategies attributed to the activities of the two projects.

Livelihood outcome: This is the result or output of the adopted livelihood strategies attributed to the activities of the IUHP and BiP: PUP projects based on their vulnerability context and asset portfolio. From the end-of-project reports of the two projects, the researcher selected and assessed six positive livelihood outcomes namely improved household income, food security, health, and socio-economic well-being, access to credit and security of tenure, and reduced vulnerability. The study quantified and measured perceptions of sample beneficiaries of the impact of the two projects on each livelihood outcome on a five-point Likert scale ranging from 0 to 4. This represented a continuum from no impact to very high impact, where 0 indicated no impact (NI), 1 indicated low impact (LI), 2 indicated average impact (AI), 3 was high impact (HI) and 4 indicated very high impact (VHI). The study aggregated individual scores of the six selected livelihood outcomes into a single numeric composite index score for each respondent known as the livelihood outcome index score.

Living conditions: This is the general physical living environment in selected six project sites of the IUHP and BiP: PUP projects as reflected by the five key characteristics of a slum namely: access to improved water, access to improved sanitation, structural quality of housing, reduced overcrowding, and improved security of tenure. The study determined perception of project beneficiaries about impact of the two projects on each of the key characteristics by comparing their conditions in the pre-project and post-project periods on a five-point Likert scale ranging from 0 to 4. This represented a continuum from no impact to very high impact, where 0 indicated no impact (NI), 1 indicated low impact (LI), 2 indicated average impact (AI), 3 was high impact (HI) and 4 indicated very high impact (VHI). The study aggregated individual scores of the five key characteristics of a

slum settlement into a single numeric composite index score for each respondent known as living condition index score.

Maintenance: This is a stage in the life cycle of the IUHP and BiP: PUP projects that entail on-going repair, protection, servicing, training, renovations, and processes needed to preserve and maintain complete and implemented projects. This was measured using a CPI score based on perceptions of sample beneficiaries in three indicators of maintenance namely assignment of roles and responsibilities, capacity building and empowerment, and day-to-day activities.

Monitoring: This is a systematic and continuous process of collection and analysis of data on specified indicators of the IUHP and BiP: PUP projects to provide stakeholders with information on the extent of progress or lack thereof, in achievement of expected results.

Evaluation: This is a periodic process of systematic and objective assessment of completed the IUHP and BiP: PUP projects in the design, implementation, and achievement of the expected results.

Monitoring and evaluation: This is a regular process of systematic and continuous collection and assessment of data about the IUHP and BiP: PUP projects to track progress towards pre-specified goals and objectives, take corrective actions and highlight any unintended effects. The study measured participation in monitoring and evaluation using a CPI score based on perceptions of sample beneficiaries in the five indicators namely: identification, discussion, and agreement on indicators of progress and success; reporting progress and enhancing transparency and accountability; taking corrective measures of lessons learnt; access to reports and information; and keeping the project on track.

Perception: Refers to an individual's subjective evaluation and interpretation of collected sensory information (stimuli) about a particular subject matter by assigning order and meaning to it based on personal awareness, experiences, feelings, attitudes, culture, opinions and judgements. The interpretation is subjective and influenced by personal feelings, opinions, and judgements of the targeted audience. In this study, the study was interested in the perceptions of project beneficiaries about their participation in post-implementation stages, sustainability of implemented interventions, and impact of the two projects on the living conditions and livelihoods. The study assessed the perceptions

based on the notion that the project beneficiaries are primary consumers of the implemented interventions and thus intrinsically motivated to ensure their sustainability and impacts. The respondents expressed their opinions based on experiences and knowledge about activities and benefits of the two projects. For participation in post-implementation stages and sustainability, the study measured the perception of the respondents about various indicators of the two concepts on a five-point Likert scale as a continuum from the lowest rating to the highest rating. Similarly, the respondents measured the impact by comparing the situation before and after implementation of the two projects on a five-point Likert scale as a continuum from the lowest rating to the highest rating.

Project: This refers to an intervention implemented to address a particular need or problem facing a society or group of people. In this study, a project referred to the IUHP and BiP: PUP implemented in secondary cities of Nakuru and Kitale, respectively, and facilitated by the ITDG-EA.

Slum upgrading: This refers to the activities of the IUHP and BiP: PUP projects implemented for gradual improvement in the living conditions and livelihoods by addressing inadequate access to water and sanitation, poor structural quality of housing, overcrowding, and lack of security of tenure in selected six project sites from secondary cities of Nakuru and Kitale.

Sustainability: This refer to the long-term viability of complete and implemented projects (IUHP and BiP: PUP project) to continue and maintain their activities and benefits beyond the project-period and/or after exit and reduction of major funding and support from the ITDG-EA. The study adopted three dimensions proposed by Lyons et al. (2001), and Schenck and Louw (1995) to measure sustainability of a community development project. The dimensions are project longevity (project sustainability), long-term impact to individual beneficiaries (personal sustainability), and long-term impact on the entire community (community sustainability). The level of sustainability was measured on a five-point Likert scale ranging from 1 to 5, representing a continuum from no sustainability to maximum sustainability. The researcher measured sustainability based on perceptions of sample beneficiaries about sustainability of various indicators of the

three adopted dimensions. The study aggregated individual scores of indicators of each dimension into a single composite index score for each respondent known as a sustainability index score. The higher the index score, the higher was the level of sustainability of the two projects as perceived by targeted beneficiaries, and vice versa. To differentiate between levels of sustainability among sample beneficiaries, the study transformed the index score into ordinal categories to denote low, average, and high sustainability.

Secondary city (town): This refers to a second-tier or level of a country's urban hierarchical system below the primary order of cities (towns) based on population threshold, physical size and functions such as political, economic, social and historical significance (Girma et al., 2019; Roberts, 2014; Satterthwaite, 2017; UN, 2016). Secondary cities perform critical governance, logistical and production functions at a sub-national or regional level and serve as recent development growth poles in a country. They have stronger economic and cultural ties with the surrounding areas compared to primary cities, which have stronger international connections (Roberts & Hohman, 2014; Satterthwaite, 2017). According to UN-Habitat, the population of secondary cities varies across countries. In SSA, the population ranges between 100,000 and 500,000 people, although population is not the only metric used (Githira et al., 2020). In Kenya, secondary cities and towns are mostly County Headquarters and home to sub-national political offices such as Eldoret, Nyeri, **Nakuru**, Kakamega, Kericho, Garissa, Machakos, Naivasha, **Kitale**, Thika, among others. These cities have populations between 50,000 and 325,000 people, which are above the urban population threshold of 5000 people in the country (Otiso, 2005). The study selected Nakuru and Kitale as secondary cities in Kenya (see Footnote 1).

On the other hand, a primary city refers to a city that far outranks secondary cities in a country in terms of population, size, functions and political significance and quality of life (Robert, 2014). Primary cities act as national economic, political and administrative centres with advantage of better lateral connectivity and infrastructural development, which attracts quality services, thereby widening their prosperity gap with secondary

cities (Cities alliance, 2019; Robert, 2014). In Kenya, the primary cities include Nairobi, Mombasa and Kisumu in that order (KNBS, 2019).

Although a town and a city are urban centers, they vary widely across countries and jurisdictions in terms of geographical size, population, functions and level of infrastructural development. In general, a city is much larger and more developed than a town in terms of functions and infrastructure compared to towns. However, there is a thin line between the two with many countries referring to a city as a town possessing city status conferred by the government, an urban locality exceeding an arbitrary population size, a town dominating other towns with particular regional economic or administrative significance. As such, approaches to differentiate between a secondary city and a secondary town vary widely across countries including Kenya. Thus, the terms a secondary city and a secondary town are used interchangeably across regions including SSA (Githira et al., 2020; Otiso, 2005). In this study, the terms secondary city and secondary town are used interchangeably.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a theoretical and empirical literature review on the key concepts of the study namely slum, slum upgrading, sustainability of slum upgrading, community participation in slum upgrading, and impact of slum upgrading on living conditions and livelihoods. The review provides a context to the research problem by identifying the existing knowledge gaps that the study attempted to fill. The chapter also outlines the theoretical and conceptual frameworks that guided the study in highlighting the nexus between sustainability of slum upgrading and community participation in the post-implementation stages of the projects.

2.2 The Concept of Urban Slum

One of the major challenges to improving the living conditions of slum settlements is the wide variations in the definition of the concept of a slum across countries and regions (Gilbert, 2007; UN-Habitat, 2003b). The concept is complex and methodologically elusive, coming with different definitions. The simplest definition of a slum is a squalid and overcrowded sector of an urban area characterized by inferior living conditions (UN-Habitat, 2003a). According to UN-Habitat (2007a), this simple definition encapsulates three essential characteristics of a slum namely high densities (people and structures), low standards of housing (structures and services), and “squalor” (shabbiness and dirtiness resulting from poverty and neglect). Thus, a slum is a contiguous settlement characterized by inadequate housing and basic services. The first two criteria (high densities and low standards of housing) are physical and spatial, while the third (‘squalor’) is social and behavioural.

Although these are general descriptions of a slum, there was no universal definition until the year 2003 when the United Nations Global Report on Human Settlements provided a more global and operational definition focusing on the physical living conditions and legal aspects. A slum was then defined as a physically and socially run-down (deteriorated) and heavily populated area of an urban area characterized by substandard housing and squalor and lacking in tenure security (UN-Habitat, 2003b) and in which satisfactory family life is impossible (Tannerfeldt & Ljung,

2006; UN-Habitat, 2007a). It is a physical and spatial manifestation of several overlapping forces including urban poverty, bad governance, rural-urban migration, lack of or deficiency in the regulatory framework, lack of political will, and intra-city inequality (UN, 2010; UN-Habitat, 2002b). Slums are often regarded as informal, which has contributed to a lack of recognition by public authorities as being an integral part of the city (McGranahan et al., 2008) in terms of the larger economic, social and legal framework (Lall & Lall, 2007; UN, 2010).

However, Cronin (2011) and UN-Habitat (2003b) observe that there are two perspectives of a slum. The negative perspective considers a slum as a squalid and unsafe environment facing multiple threats to the health and security of the residents and a "breeding ground" for social evils such as crime and drug abuse, and so forth. As a result, a slum is marginalized and largely disenfranchised, exposed to disease and crime, and vulnerable to natural disasters such as floods and landslides. The positive perspective considers a slum as a manifestation of the ingenuity and resilience with which the urban poor organize themselves to face the existing challenges. It is a large-scale solution to housing for the urban poor. The small informal entrepreneurship in slums serves as building blocks for the formal economic systems in urban areas (UN-Habitat, 2003a, 2008b). Globally, 85.0% of all new employment opportunities in urban areas occur in the informal sector (UN-Habitat, 2010a). In Africa, two in every three urban residents obtain their livelihoods from informal sectors (Sommers, 2010) due to outstanding levels of solidarity, partnership, and a vibrant mix of cultures (Lall & Lall, 2007). Thus, policymakers are increasingly viewing slums as places of opportunity and a process of development, consolidation, and improvement. Slums are now an integral and inevitable part of most cities playing a key role in socio-economic development. The importance of slums in housing the growing population of the urban poor cannot be overstated. However, the informal opportunities are unskilled, very low-paid, and insecure leading to a 'subsistence economy' (UN-Habitat, 2008b). Thus, UN-Habitat (2003a) observes that the positive attributes of slum settlements should not justify their existence.

Globally, there are a variety of names and tenure arrangements referring to a slum. Some of the common names include *favela* (Brazil), skid row, hood and ghetto (USA), *barrio* (Spain and

Portugal), and *Mabanda* (Tanzania). Others are *Penghuqu* (China), *Umjondolo* (Durban, South Africa), Rookery and Purlieu (England), and *Gecekondu* (Turkey) (Lall & Lall, 2007). In addition, shanty, squatter, informal and low-income settlements are used interchangeably with a slum; although each has a different meaning, origin, and usage (Lall & Lall, 2007; UN-Habitat, 2003b).

2.2.1 Key Characteristics of the Living Conditions of a Slum Settlement

Although slums are unique and vary significantly according to local cultures and conditions, accidents of history or politics, and topography of the built environment, they have some common features (UN, 2010). According to the global definition by UN-Habitat, a slum settlement combines, to varying degrees, one or more of the following five key characteristics (deprivations or indicators): inadequate access to improved water; inadequate access to improved sanitation; poor structural quality housing; insufficient living area (overcrowding); and lack of security of tenure (Cronin, 2011; UN, 2010; UN-Habitat, 2003b, 2014a). The first four characteristics are physical expressions i.e. access to basic services, overcrowding, and housing structure, while the fifth characteristic (security of tenure) is about the legal and formal characteristics of the settlement (UN-Habitat, 2003b).

Based on this definition, a slum household is a group of individuals living under the same roof in an urban area and facing a combination of one or more of the key characteristics of a slum (Lall & Lall, 2007; UN-Habitat, 2009a). The five characteristics are largely quantifiable and measurable to assess progress towards addressing the challenges of a slum settlement. Each characteristic specifies 'acceptable' conditions to classify a slum household (Cronin, 2011; UN-Habitat, 2009a). This makes the understanding of a slum simple, adaptable, operational, and pragmatic; offers clear and measurable indicators; and allows the use of household-level data (UN-Habitat, 2006). This study discusses the five key characteristics as follows.

Access to improved water refers to a sufficient amount of quality water (at least 20 litres per person per day) for family use, at an affordable price (less than 10% of the total household income) and available within an acceptable collection distance and without extreme effort (less than an hour a day of walking time). This is achieved through household connection, and/or

access to a public standpipe, borehole, protected dug well, protected spring, or rainwater collection (UN, 2007; UN-Habitat, 2009a). A source of water is physically accessible if it is within, or near the household. According to WHO, a source should be within 1,000 metres of the home, and the collection time should not exceed 30 minutes (WHO & UNICEF, 2013).

WHO and UNICEF (2013) classify sources of water into two categories: improved sources and unimproved sources. An improved water source is a source constructed and designed to protect the user from outside contamination, particularly of faecal matter. Such sources include piped water to the dwelling units or plot, rainwater collection, public tap/standpipe (serving no more than 5 households), protected spring, protected dug well, bottled water (if the secondary source is also improved); and borehole/tube well. Access to improved water is the proportion of the population with sustainable access to an improved water source (Cronin, 2011; UN-Habitat, 2003a; WHO & UNICEF, 2013). An unimproved water source is a source that does not guarantee protection from outside contamination. Such sources include vendor-provided waters, tanker truck, unprotected well and spring, cart with a tank/drum, surface water (e.g. a river, dam, lake, pond, canal, etc.), and bottled water (if the source is not improved) (UN-Habitat, 2002a, 2003). A settlement has inadequate access to water if less than 50% of the households have access to improved water, with at least 20 litres per person per day available within collection distance. However, slums have inadequate access to improved water in terms of quantity, quality, and distribution. There is also contamination and pollution of groundwater, rivers, and other waterways (UN-Habitat, 2003a; WHO & UNICEF, 2013).

The WHO and UNICEF (2013) classify sanitation facilities into two categories: improved sanitation and unimproved sanitation. Improved sanitation is an excreta disposal system that hygienically separates the human excreta from human contact, and is shared with a reasonable number of people (UN, 2007). Such a facility is adequate if it is private or shared by a maximum of two households (UN-Habitat, 2007a). In addition, the facility has safe “on-site” collection, storage, treatment, and disposal of human excreta; connected to a sewerage system; and can manage, re-use or recycle solid waste, collect and manage industrial and hazardous wastes. The common types of improved sanitation include flush/pour-flush toilet connected to a piped sewer

system, latrine connected to a sewer, piped sewer system, septic tank or pit, ventilated improved pit latrine, pit latrine with a slab or platform, and composting toilet (WHO & UNICEF, 2013). Access to improved sanitation refers to the proportion of the population with access to a facility that hygienically separates human excreta from human contact, and has reasonable access to a public sewer, septic tank, pour-flush latrine, or ventilated improved pit latrine. However, unimproved sanitation is a facility that unhygienically exposes a user into contact with human excreta. It includes pit latrines without a lid, buckets, hanging toilets, and open defecation. A settlement has inadequate sanitation if less than 50% of the population has access to improved sanitation (UN-Habitat, 2007a; WHO & UNICEF, 2013).

A structurally quality house is one built in a non-hazardous location and has a permanent and adequate structure capable of protecting its inhabitants from the extremes of climatic conditions (UN, 2007; UN-Habitat, 2007a). The permanency of structure emphasizes the quality of construction (use of permanent building materials for walls, floor, and roof), compliance with building codes, standards, and by-laws, and physical state of the building (not in a physically dilapidated state and not requiring major repairs) (UN-Habitat, 2007a). The location of a house should be in an environmentally safe and non-risky area not on or near a hazardous site. Hazardous sites include location on or near dumpsite; areas geologically prone to landslide, steep slope, earthquake, and flood; around high industrial pollution (on or near toxic wastes); and in a dangerous right of way or unprotected high-risk area (such as rail, highway and power lines) (UN, 2007; UN-Habitat, 2002a). However, slums are characterized by substandard housing and inadequate building structures made up of non-permanent materials, which are vulnerable to climatic conditions (UN-Habitat, 2002a). Slums have informal housing, which do not conform to the required building standards, laws, and regulatory frameworks (UN-Habitat, 2003a).

A sufficient living area refers to a situation where not more than three household members share the same habitable room in a house. Overcrowding describes a situation in which a large number of household members occupy a small space in a house leading to a low living area per person, high occupancy rates (number of persons sharing one room), and/or a high number of single-room units (UN-Habitat, 2003b). However, majority of slums worldwide are overcrowded with

high occupancy rates of five and more persons sharing a one-room unit used for cooking, sleeping, living, and other household activities (UN-Habitat, 2003a).

Security of tenure entails the legal rights of an individual or group to land and/or residential property, which guarantees effective protection by the state against arbitrary forced evictions, harassment, and any other threat. It consists of various laws, rules, procedures, and obligations that govern the rights, interests, duties, and liabilities in the use and control of land or house (Darshini, 2010; UN-Habitat, 2009a). It is the cornerstone of the right to adequate and durable housing and an essential element of any successful shelter strategy. It is the key that unlocks investment in home improvement and motivates residents to maintain new infrastructure and continue improvements (Berger, 2006; UN-Habitat, 2003b). It is measured using the proportion of households with evidence of enforceable agreement or documentation as proof of protection against forced eviction (Berger, 2006; Darshini, 2010; UN-Habitat, 2009a).

2.3 Slum Upgrading

2.3.1 An Overview of Traditional Strategy Response to Challenges of Slums

A slum settlement is a physical and spatial manifestation of several overlapping forces including urban poverty, bad governance, rural-urban migration, lack of or deficiency in the regulatory framework, lack of political will, and intra-city inequality (UN, 2010; UN-Habitat, 2002b). The magnitude of these challenges point to the institutional failures in housing policy, housing finance, public utilities, local governance, and secure tenure. Studies show that addressing these challenges and improving slum settlement has global economic and social returns (Arimah, 2011). However, slum settlements are unique in social, historical, economic, and political contexts, which make them complex and not homogeneous. As a result, each settlement requires a unique intervention responding to its unique context with limited generalization. Thus, the slum upgrading interventions adopted vary across slums (Cities Alliance, 2016).

States worldwide have experimented with diverse response strategies to address the expanding and deteriorating slum settlements since 1960s with the aim of improving the living conditions (Mansuri & Rao, 2013; UN, 2010; UN-Habitat, 2003b). The traditional strategies in the 1960s

and 1970s included benign neglect, forced eviction and slum clearance (demolition), and slum resettlement (Arimah, 2011; UN-Habitat, 2003a, 2003b). During this time, authorities in many countries adopted a policy of benign neglect or laissez-faire attitude towards mushrooming of slums resulting from increased rural-urban migration. The assumption was that slums were illegal and unavoidable, but a temporary phenomenon that could be solved through gradual social and economic growth in urban and rural areas (UN-Habitat, 2003b). Therefore, policy makers ignored slums, denied them basic services, and only tolerated as vestiges of ‘traditional villages’ in the process of absorption into the new urban planning system (Njoh, 2003). They regarded slums as a temporary and immediate solution to affordable shelter by the new arrivals. As a result, slums posed no major threats to long-term urban development. Authorities depicted slums as blank spots on land use maps indicative of undeveloped land (UN-Habitat, 2003b).

In the early 1970s, the envisioned socio-economic development by the benign neglect policy failed to solve the challenge of continued mushrooming and expansion of slums (Arimah, 2011). This led to the adoption of forced eviction and slum clearance in the 1970s to 1980s (UN-Habitat, 2003b). Forced eviction involved permanent or temporary removal of slum dwellers against the will of individuals, families, and/or communities from homes and/or land, which they occupy, without the provision of and access to appropriate forms of legal or other protection (UN-Habitat, 2014c). The strategy was rooted in the fact that many slums operated informally without any legal claim to the land and thus not recognized by the states (UN-Habitat, 2010). In addition, it was used to remove slums illegally located on prime lands earmarked for the national interest. The strategy was still prevalent in political environments predominated by a centralized system, poor urban governance, non-recognition or lack of civil society movements, and lack of legal protection against forced evictions (UN-Habitat, 2014c). There was no negotiation with slum dwellers and any alternative solutions or compensation. Therefore, the strategy focused more on the symptoms rather than the root causes that created and maintained slums. This resulted in displacement rather than the elimination of slums. It also compounded housing deficit and increased poverty due to the destruction of fixed capital and livelihoods, loss of social and safety networks, and disintegration of families (UN-Habitat, 2003b; World Bank, 2000).

From the above limitations, forced eviction and slum clearance was replaced by slum resettlement. This strategy involved the removal and relocation of evicted slum dwellers to alternative locations, usually on the periphery of the urban area (UN-Habitat, 2003b). The state allocated free land for the evicted slum dwellers to build their houses, or in some cases provided slum dwellers with low-cost housing (UN-Habitat, 2003b; World Bank, 2000). At best, the strategy involved negotiation and agreement with the affected slum dwellers on an assumption that the evictees legally owned the land or had occupied it for a long period (UN-Habitat, 2003b). In most cases, the state used the land left for some other purposes. However, the strategy was substantially disruptive and greatly interrupted the livelihoods, assets, and social networks that existed (UN-Habitat, 2011a; World Bank, 2000).

In summary, observations indicate that the above traditional strategies were largely top-down, unsustainable and failed to address the root cause of slum settlement (Buckley & Kalarickal, 2005; Hernandez, 2008; UN-Habitat, 2003a). They did not provide alternative affordable housing leading to the evictees seeking alternative settlement in new locations. This called for an alternative urban governance approach that promoted social and economic inclusion of the slum dwellers (Mansuri & Rao, 2013; UN-Habitat, 2013). This called for a rethink in strategy in 1980s (Mansuri & Rao, 2013; UN-Habitat, 2009a, 2013), which focused on gradual improvement, and formalization, and integration of the slum settlements into the overall urban framework through slum upgrading (Cities Alliance, 2021a, 2021b; Okyere et al., 2016; UN-DESA, 2020). The aim is to reverse the five characteristics of a slum settlement by improving the living conditions and strengthening the livelihoods of slum dwellers (Cities Alliances, 2016; UN-Habitat, 2019).

2.3.2 The Concept of Slum Upgrading

In the 1980s, there were concerted efforts globally to improve the living conditions and livelihoods of existing slums (Mansuri & Rao, 2013; UN-Habitat, 2009a, 2013) with minimum disruption and loss of assets (UN-Habitat, 2008a; World Bank, 2000) through slum upgrading. Broadly, slum upgrading is a process of gradual improvement in the living conditions and livelihoods of an existing slum through the provision of access to basic services to formalize and integrate the settlement into the overall urban framework (Cities Alliance, 2021a, 2021b;

Okyere et al., 2016; UN-DESA, 2020). The aim is to reverse the five characteristics of a slum settlement by improving the living conditions and strengthening the livelihoods of slum dwellers (Cities Alliances, 2016; UN-Habitat, 2019).

Slum upgrading is multidimensional and involves improvement in the physical, economic, social, institutional, environmental and community aspects of the living conditions and livelihoods of a slum settlement (Cities Alliance, 2016). The typical actions include regularizing security of tenure, installing or improving basic infrastructure and services, mitigating environmental hazards, constructing or rehabilitating community facilities, improving homes, enhancing income-earning opportunities, and building social capital and institutional framework (Tannerfeldt & Ljung, 2006; UN Millennium Project, 2005). The success depends on collective, collaborative and participation of all stakeholders, especially the slum dwellers (Arimah, 2011; Cities Alliance, 2016; Louise & Cronin, 2011).

Slum upgrading has been the most favoured and widely adopted strategy featuring prominently on the global agenda including in the MDGs and the SDGs (Perlman, 2010; UN-Habitat, 2010). The MDG 7, Target 7d, sought to achieve significant improvement in the lives of at least 100 million slum dwellers, by the year 2020 (UNDP, 2011, 2003; UN-Habitat, 2007a, 2008, 2013) by reversing the key characteristics of slums. According to the MDG 2015 Report (UN, 2015a), there was a significant improvement in the living conditions and livelihoods in slum settlements between 2000 and 2004 leading to a decline in the proportion of the urban population living in slums in developing countries from 39.4% in 2000 to 29.7% in 2014. However, despite the success, the absolute slum population continued to increase globally (UN, 2015b). In recognition of this dilemma, the UN significantly featured the agenda of improving slum settlement in the SDGs, which replaced the MDGs. A number of the United Nations-sponsored Sustainable Development Goals (SDGs) established in 2015 sought to address various challenges affecting slum settlements worldwide by the year 2030. Specifically, SDG 11 seeks to “*Make cities and human settlements inclusive, safe, resilient and sustainable,*” by focusing on Target 11.1 — “*By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.*” Indicator 11.1.1 which is about the “*Proportion of urban population living in*

slums, informal settlements or inadequate housing.” This was in addition to SDG 1 (End poverty in all its forms everywhere), SDG 6 (Ensure availability and sustainable management of water and sanitation for all) and SDG 10 (Reduce income inequalities within and among countries) (UN, 2020; UN-Habitat, 2021a, 2020b). UN (2017) observed that the United Nations also adopted a New Urban Agenda, which is a blueprint for the achievement of sustainable urbanization through slum upgrading, to improve access to safe and affordable housing with basic services by 2030.

Slum upgrading marked a radical change in official attitude towards slum settlements (UN-Habitat, 2003b). There was a conviction that if the state could provide an enabling environment, then slum residents, given their organizational skills and resourcefulness, would gradually improve their settlement (UN-Habitat, 2003b). For example, security of tenure is critical in slum upgrading, and this only guaranteed by the state through appropriate policies (Gulyani & Bassett, 2007). Slum upgrading takes place in two ways namely total redevelopment and *in-situ* upgrading. Total redevelopment entails clearing an existing settlement, relocating, and resettling residents in suitable temporary decanting sites, normally at the periphery of cities to allow upgrading to take place (Franklin, 2020). The temporal relocation often disrupts the “fragile community networks” and “livelihood opportunities” of the affected settlement. *In-situ* upgrading involves improving the existing settlement from its present location with no or minimum displacement. This entails gradual regularization of security of tenure, providing or improving basic services and infrastructure, and communal facilities (Franklin, 2020). As a result, Abdenur (2009) and Franklin (2020) argues that *in-situ* upgrading is more preferred in maintaining social networks, community cohesion, and existing livelihood opportunities.

The total redevelopment and/or *in-situ* slum upgrading can be implemented through top-bottom, bottom-up or integrated/participatory approaches (Cronin & Guthrie, 2011). In the top-down approach, the state through its centralized institutions, acting independently and without any consultation, initiates slum upgrading by identifying the needs to be addressed, formulating and implementing strategies, determining the response, and coming up with action programmes. This is the main approach in centralized urban planning, targeting projects with large-scale impact on

the large urban area. However, in some cases, the approach fails due to a lack of community participation and insensitivity to community opinion (Cronin & Guthrie, 2011; Majale, 2008).

The bottom-top approach entails the external agencies, such as NGOs, initiating and implementing slum upgrading by engaging the local community through local CBOs for appropriate impact. The external agencies lobby the state for support, resources and policies to create an enabling environment for slum upgrading (Cronin & Guthrie, 2011). However, Arcila (2008) observed that in most cases, the external agencies initiate slum upgrading and mobilize the local community to implement it. There is a possibility of the project not being a local priority due to a lack of ownership and responsibility.

From the limitations of the bottom-up and top-down approaches, international organizations and NGOs emphasize a participatory or integrated approach, which involves active participation and partnership of a variety of stakeholders, especially slum dwellers. The approach assumes that effective slum upgrading requires a holistic focus integrating social, economic, political, structural, physical, and environmental aspects of a slum settlement (Cronin & Guthrie, 2011; Majale, 2008). Slum dwellers actively participate in needs assessments to identify local needs, priorities, and possible solutions addressed through slum upgrading (Gonzalo & Massyn, 2008; Majale, 2008; Somsook, 2005). However, the high cost and time involved (Stenseke, 2009) and high levels of poverty limit the slum dwellers to implement their identified needs and solutions. As such, although the slum dwellers conduct a needs assessment, they rely on external agencies for facilitation and support. This creates a possibility of the external agencies manipulating and modifying the original decisions and priorities of the slum dwellers (Arcila, 2008; Cronin & Guthrie, 2011). In addition, Majale (2008) opines that the political culture and power structure in the local community may affect participation. However, if well implemented and maintained, this approach enhances the sustainability of slum upgrading.

Globally, countries have embraced slum upgrading with varied results (Mansouri & Rao, 2013; UN-Habitat, 2006). In 2008, the United Nations launched the Participatory Slum Upgrading Programme (PSUP) to strengthen the capacity of institutions and stakeholders in 63 cities in 30

countries. The PSUP sought to assess needs, identify challenges and response mechanisms, prioritize interventions at a neighbourhood level, establish networks, undertake capacity building, and identify funding for slum upgrading (UN-Habitat, 2014a). The World Bank initiated the Kampung Improvement Programme in Jakarta, Indonesia, and adopted a citywide approach that encouraged partnership and participation in providing basic services to an estimated five million people in 15 years (Gulyani & Bassett, 2007). Riley et al. (2001) add that the Favela-Bairro programme in Rio de Janeiro in the 1990s improved access to basic services and integrated slums into the conventional urban fabric of the city.

Africa has also embraced slum upgrading as a viable, low cost and effective strategy (Cities Alliance, 2016). For example, countries such as Ghana, Tunisia, Senegal, and Morocco have undertaken participatory slum upgrading with the support and facilitation from international agencies (Arimah, 2010; Gulyani & Basset, 2007). In Luanda, Angola, the Urban Poverty Programme in 1999 provided access to basic services, built capacities and promoted mechanisms of dialogue and engagement among different actors (Mayoux et al., 2002). The Chamanculo C project in Maputo, Mozambique, enabled capacity building and economic livelihoods and strengthened local associations in providing basic services (UN-Habitat, 2010). The Transforming Settlements of the Urban Poor Project in Uganda encouraged dialogue among stakeholders in slum upgrading in secondary cities (UN-Habitat, 2010). In Egypt, the state established the Informal Settlements Development Facility to improve housing conditions. The programme gave slum dwellers a choice to relocate to new housing on the same site, new housing in a new city, or get financial compensation and make their arrangements in alternative cities and sites (Shehayeb & Abdelhlim, 2012). In Zimbabwe, the Harare Slum Upgrading Programme (2010–2015) profiled, documented, and initiated incremental slum upgrading (Chitekwe-Biti, 2014; Muchadenyika, 2015). Cities Alliance (2016) observed that in South Africa, the state introduced the Upgrading of Informal Settlements Programme in 2004 to guarantee the security of tenure, improve health and security, provide basic services and facilitate participation.

The government of Kenya strongly focused and embraced slum upgrading in the year 2000 following the adoption of MDG 7 (Target 7d) (Anderson & Mwelu, 2013). The government initiated KENSUP in 2005 and KISIP in 2011 to improve the living conditions and livelihoods of slum settlements by the year 2020. This was to be achieved through the provision of physical and social services, security of tenure, access to adequate housing, and diversification of income generation opportunities (Anderson & Mwelu, 2013; Archambault et al., 2012; Munier, 2007; Muraguri, 2011; UN-Habitat, 2008d; UN-Habitat and the Kenya Slum Upgrading Programme Strategy Document, 2008). The establishment of the Constituency Development Fund in 2003 decentralized and involved the local communities, including slum dwellers, in designing, implementing, and managing development projects at the local level (GoK, 2005). In the year 2008, the government launched the Kenya Vision 2030 whose social pillar encourages participatory slum upgrading to improve access to basic services and infrastructure in 20 urban areas by the year 2030 (GoK, 2007). UN-Habitat (2004b) added that the Constitution of Kenya (2010) guarantees every citizen the right to “accessible and adequate housing” and reasonable standards of sanitation. The country also joined the PSUP of the United Nations to strengthen the structural impact of slum upgrading as a mechanism to support pro-poor citywide and sustainable urban development.

These efforts notwithstanding, the government of Kenya has disproportionately focused its slum upgrading programmes and policies in the primary cities of Nairobi, Kisumu, and Mombasa, compared to secondary cities. This was despite the available statistical evidence indicating urban and slum population in secondary cities such as Nakuru and Kitale were growing at a relatively faster rate and experiencing the same challenges as the primary cities (Majale, 2009). As a result, this study focused on slum upgrading in two secondary cities of Nakuru and Kitale in Kenya.

2.4 Community Participation in Slum Upgrading

The concept of participation has a wide variation in the interpretation of the meaning and application among different actors based on the context and background in which it transpires. In development, the concept advocates for the active involvement of the local community (targeted beneficiaries) in all decisions and activities that affect their lives (UNDP, 2013). It is a central

concept and principle of community development, which considers the local community as a key stakeholder in any project (Nzau-Muteta et al., 2005). The local community is a central actor in development activities or programmes that affect its lives for the impact to be positive, relevant, and significant in transforming the lives of the beneficiaries (Barasa & Jelagat, 2013). In this regard, Nakpodia and Ifakachukwu (2012) refers to participation in community development as community (beneficiary) participation.

Thus, community (beneficiary) participation refers to a process of active involvement of the targeted local community (beneficiaries) in influencing the decisions, direction, and execution of a development project that seeks to improve the well-being and quality of life of its members (Barasa & Jelagat, 2013). The aim is to allow the beneficiaries to voice their concerns, express their views, and be actively involved in the decision-making process to make development more responsive to their needs and priorities (Mansuri & Rao, 2003; Xali, 2005). The beneficiaries determine their development agenda, which enables development interventions to address the real needs and priorities, work towards changing its situation and build capacity to minimize dependence on outsiders (Davids, 2009; Khwaja, 2004; Mansouri & Rao, 2004). According to World Bank (2019), participation is the main and active tool to get people's views and important inputs, which are necessary to make community project more effective and efficient.

In summary, community participation involves a shift in power over the process of development away from the state and external agencies to the targeted beneficiaries affected by the development issue. It enhances their capability to define and address their own needs and aspirations (Davids, 2009; Mansuri & Rao, 2004). It is driven by specific socio-economic goals that beneficiaries seek to gain (UN-Habitat, 2008a; Williams, 2006). Lack of participation limit the understanding of community needs, weaknesses, strengths, and dynamics (Chenga et al., 2006); excludes indigenous knowledge (Ndou, 2012); leads to inappropriate projects (Barnes et al., 2014); and is a lost opportunity for community buy-in, commitment, and ownership of projects (Chenga et al., 2006; Kealey et al., 2006; Ndou, 2012). Kotze (1997) observes that participation excludes situations where an individual merely takes part in a group activity,

receives information on a decision already made, or is present in meetings but has no influence over decision-making.

The success of slum upgrading depends on the active participation of the target local community, slum residents, in the entire life cycle of a project. The aim is to tailor slum upgrading to address the real needs, concerns, priorities, and appropriate solutions of the targeted slum dwellers (Imparato & Ruster, 2003; Khwaja, 2004). Since slum settlements are complex and unique in social, historical, economic, and political contexts (Cities Alliance, 2016), effective upgrading requires the active participation of the target beneficiaries (Louise & Cronin, 2011) in all the stages of the project - participatory slum upgrading (Cities Alliance, 2016).

Participatory slum upgrading refers to the active involvement of slum dwellers and other stakeholders, at different levels and degrees of intensity, in the initiation and execution of slum upgrading, sharing of its benefits, and decision-making in all the stages of the project (Barasa & Jelagat, 2013; Satterthwaite, 2012). The beneficiaries actively participate in identifying the real needs, opportunities, priorities, and appropriate solutions (Satterthwaite, 2012; Smith, 2006). Arcila (2008), and Danso-Wiredu and Midheme (2017) argued that this influences ownership, empowerment, impact, and sustainability of slum upgrading.

Community participation is critical since slum upgrading is a spatially localized action that requires a local response, relevance of local knowledge, and good communication and sharing of that local knowledge (Danso-Wiredu & Midheme, 2017). It sensitizes slum residents on their obligations and rights, promote commitment to addressing real needs and priorities, keep stakeholders informed, coordinated, and with clear roles and responsibilities (UN-Habitat, 2001a; World Bank, 2001), and increases acceptance of the project (Danso-Wiredu & Midheme, 2017). UN-Habitat (2014b) opined that slum dwellers have important local knowledge, skills, and capacity to influence the process of slum upgrading.

There are several case studies of participatory slum upgrading (Satterthwaite, 2012; UN-Habitat, 2011a). For example, the Favela-Bairro Project in Brazil succeeded because of the active

participation of slum dwellers in planning, implementation, and maintenance of the new basic services and infrastructure through neighbourhood associations and community groups (Abiko et al., 2007; Akie et al., 2006; Cities Alliance, 2008). In Northern Pakistan, participation of beneficiaries in decision making influences better maintenance and sustainability of community-managed projects than those by the state (Khwaja, 2003). Community participation significantly increased the sustainability of water systems in six countries namely Benin, Bolivia, Honduras, Indonesia, Pakistan, and Uganda. The “Upgrading for Growth” programme in Ekurhuleni Municipality in South Africa encouraged community participation in understanding the local conditions, knowledge, needs, and appropriate solutions (Cities Alliance, 2008). Das and Takahashi (2009) observe that the Ahmedabad Slum Network Pilot Project in India succeeded in involving different stakeholders such as slum residents, local authorities, and NGOs.

As indicated earlier, Kenya has also embraced participatory slum upgrading in line with MDG 7 (7d), Kenya Vision 2030, and SDG 11 (11.1). The most recent efforts were the KENSUP in 2005 and the KISIP in 2011 (Anderson & Mwelu, 2013; GoK, 2007; UN-Habitat, 2008d). The aim was to improve the living conditions and livelihoods by the year 2020 by reversing the key characteristics of slum settlements through capacity building and empowerment (Anderson & Mwelu, 2013; Archambault et al., 2012; Huchzermeyer, 2008, 2012; Munier, 2007; Muraguri, 2011; UN-Habitat, 2008, 2010).

2.4.1 Levels of Community Participation in Slum Upgrading

Community participation entails a redistribution of power that gives participants a chance to influence decision-making in a project. This redistribution of power is on a continuum (spectrum or ladder) ranging from passive participation to active participation. Therefore, the amount of power that participants possess determines the level of participation (Arcila, 2008; White, 2011). Based on this continuum, Hamdi and Goethert (1997) identified five levels of community participation in slum upgrading namely non-participation, indirect participation, consultative participation, shared control participation, and full control participation.

In case of non-participation, the state and external agencies initiate slum upgrading and make all decisions independently without consulting the local community (White, 2011). This applies especially in cases where there is a need for urgent action, in circumstances that demand technical knowledge not available in the local community, or the project is not site-specific. It is common in centralized urban planning involving large-scale projects targeting entire urban areas or many slum areas. However, there is a high risk of the project failing to meet the real needs of the local community. In such cases, the local community has no control and importance in the process, while the external agency has very high control and importance (Hamdi & Goethert, 1997; Imparato & Ruster, 2003).

In case of indirect level of participation, the external agency take full control of slum upgrading and indirectly collect information about the local community from secondary sources to create and implement a project (Arcila, 2008; White, 2011). According to Imparato and Ruster (2003), the local community is treated as an abstract with no direct involvement. The success depends on the availability of sufficient secondary data and skills in collecting and analyzing it. The community has very low control and importance, while that of the external agency is high.

For the consultative level of participation, the external agency directly collects information from the local community to create and implement slum upgrading (White, 2011). Hamdi and Goethert (1997) and Imparato and Ruster (2003) observed that this is appropriate where there is a need for local knowledge and perspectives about the intended project and the local community has a direct claim in the outcomes. This takes the form of public assemblies to create awareness about the intended project and get the general perspective of the local community. However, the external agency is responsible for interpretation and decision-making. Therefore, the local community has very low control and importance, while that of the external agencies is high.

Moreover, in the shared control level of participation, the local community and the external agency interact as equal partners and stakeholders in the decision-making, creation, and implementation of slum upgrading (Hamdi & Goethert, 1997). Hamdi and Goethert (1997), and Imparato and Ruster (2003) argued that each partner operates on the premise that the other one

has something valuable to contribute and that all ideas and opinions are listed and considered. This fosters effective community interaction and reflects the ideals and principles of participatory approaches. The local community and external agencies have high importance and control of the project.

The full control level of participation is the highest level of participation in which the local community actively participates in initiating slum upgrading, dominating the decision-making process, and only consulting the external agencies for support and facilitation when needed (Hamdi & Goethert, 1997). The local community identifies needs, priorities, and possible solutions and initiates slum upgrading. It only seeks the support and facilitation of the external agencies when needed (Somsook, 2005). The aim is to build self-reliance and empower the local community to address real needs, and negotiate and engage in trade-offs with external agencies where possible (Gonzalo & Massyn, 2008). Imperato and Ruster (2003) add that the local community is responsible for all decisions and activities and has very high control and importance, while the external agency has none.

2.4.2 Community Participation and Stages of Slum Upgrading

The levels of participation, described above, are dynamic over time and vary across the different stages (phases) of slum upgrading (Hamdi & Goethert, 1997; White, 2011) serving different functions. It is therefore important to identify the ideal level of participation for a given stage (Arcila, 2008; Perten, 2011; White, 2011). Hamdi and Goethert (1997) developed a framework for identifying appropriate levels of participation across different stages of slum upgrading. From the framework, slum upgrading has several stages namely: initiation (identification), planning, design, implementation, monitoring, evaluation, and maintenance. Each stage involves different stakeholders in a relationship that serves their best mutual interests (Hamdi & Goethert, 1997; Schenck & Louw, 1995). The goal is to use participation in the most effective way rather than to achieve the highest level. The combination of each stage with a particular level of participation has advantages and disadvantages, which influence the success of slum upgrading (Arcila (2008). The discussion of these stages and their appropriate levels of participation are as follows:

The initiation stage is the first stage in the life cycle of a project that involves needs assessment, development and selection of the project, and definition of the objectives, goals, and general scope (Arcila, 2008; Ehigiator, 2013). Specific expertise or skill from the local community in identifying and prioritizing the needs is not required (Perten, 2011; Arcila, 2008). This ensures that the project originates as a community need with community members as direct initiators of the process and recipients of the benefits (Ehigiator, 2013; Hamdi & Goethert, 1997). In this way, the external agency has no predetermined ideas about the community's needs and appropriate interventions, and relies on the community to come up with the appropriate intervention that best responds to the identified need (Ehigiator, 2013; Jacob, 2011). Many development projects fail due to a lack of community participation in this stage (Jacob, 2011). Therefore, Hamdi and Goethert (1997) and Perten (2011) recommends consultative, shared control, or full control levels of participation are suitable for this stage.

The planning stage involves making key decisions and defining details and specific activities key to the implementation of the project including formulation of goals and objectives, development of strategies, outlining the implementation programme, development of the budget, and estimation and mobilization of resources (Perten, 2011). In addition, there is the specification of the roles and responsibilities for each actor, development of work plans, and establishment of monitoring and evaluation system (UN-Habitat, 2014a; Barasa & Jelagat, 2013; White, 2011). This is the most vital stage that requires joint involvement of the local community and external agency (White, 2011) to ensure adequate understanding of the developed plans (Jelagat & Barasa, 2013). Therefore, Arcila (2008) and White (2011) recommends shared control is the most appropriate level of participation for harmonization of the varied interests of all stakeholders. In this way, each stakeholder has the opportunity to understand its roles and extent of involvement in the project.

The design stage involves developing details of how to realize the decisions made at the planning stage, especially the roles of the different actors (Hamdi & Goethert, 1997). This is critical for the actualization and sustainability of the developed plans (Perten, 2011). The stage is complex and may require more technical and procedural knowledge, which could be limited in the local

community. In such cases, there is a need for more active involvement of the external agency through a project technical team and less involvement of the local community, usually through indirect or consultative participation (Arcila, 2008; Imparato & Ruster, 2003; Perten, 2011). However, Hamdi and Goethert (1997) observed that some projects require local knowledge and expertise to come up with appropriate alternative methods, solutions, and materials. In such cases, community involvement offers potential advantages of inducing innovative solutions.

The implementation stage is about rolling out and executing the planned and designed project. This requires the involvement of all stakeholders in the actualization of the project. In cases where the implementation is complex and requires technical knowledge and expertise, there is a need for more active involvement of the external agency through a project technical team and less involvement of the local community (Arcila, 2008; Imparato & Ruster 2003). Therefore, Arcila (2008) and Imparato and Ruster (2003) argues there is a need for appropriate strategies to encourage participation of the local community, especially where there is a need for local knowledge, understanding, and resources to implement the project. The aim is to assist local community to enhance ownership, capacity building and empowerment, and generate income.

The monitoring and evaluation stage involves assessment of the impact of a project and provision of essential and regular feedback to all stakeholders for decision-making on the progress in achieving its goals and objectives (Perten, 2011). Monitoring is a systematic and continuous process of collection and analysis of data on specified indicators of a development project to provide stakeholders with regular feedback on the extent of progress or lack thereof, in the achievement of the expected results (Shapiro, 2002; UNDP, 2002). It also assesses the effectiveness and efficiency of the strategies adopted in implementation of the project (Chenga et al., 2006). Chenga et al. (2006) and White (2011) argues that it is conducted throughout the life cycle of a project to track progress against set plans and to check compliance with established standards as a basis for decision-making at various stages. The most important is the ex-post monitoring conducted after the project period to check on the continued generation of expected benefits and ascertain corrective actions from the lessons learnt at the end of the project.

Evaluation, on the other hand, is a periodic process of systematic and objective assessment of either a completed or on-going development project in terms of its design, implementation, and achievement of the expected results (Lefevre et al., 2000; White, 2011). It is the comparison of the actual impacts of a project against the agreed strategic plans (Shapiro, 2002). The aim is to determine the relevance, effectiveness, efficiency, impact, sustainability (Lefevre et al., 2000; White, 2011), and success of a project in achieving objectives (Shapiro, 2002). According to MFA (2012), evaluation is conducted periodically at specific points (time) in the life cycle of the project for a different purpose, viewpoint, and focus. Thus, there are various types of evaluations depending on the timelines namely *ex-ante* (appraisal), *mid-term* (formative), *end-of-project* (end-term, summative, final or terminal), and *ex-post*.

The *ex-ante* evaluation is an evaluation conducted before the start of the intended project to provide baseline information including the relevance and pre-operation conditions as a basis for monitoring and establishment of change in the outcomes (MFA, 2012). The *Mid-term* evaluation is an evaluation conducted during the life of an on-going project to provide internal feedback for monitoring and improvement and to verify whether the implementation is as planned and on course to achieve the expected results. It focuses on relevance, efficiency, and analysis of impeding and contributing factors in achieving the expected results (MFA, 2012; Shapiro, 2002). The results are used to guide continuation in the implementation of the project, modify it if need be or stop it altogether before it is too late (Marx et al., 2013). The *end-of-project* evaluation is an evaluation conducted immediately at the end of a complete and implemented project to assess its success in the achievement of the goals. It examines the relevance, efficiency, and effectiveness of a fully developed and mature project. The information obtained acts as a lessons-learnt document for similar future projects (MFA, 2012; Shapiro, 2002). However, MFA (2012) added that *end-of-project* evaluation immediately does not give a fully reliable image of sustainability and the long-term impact of a project. This requires an *ex-post* evaluation to bring out issues of sustainability.

The *ex-post* evaluation is an evaluation conducted after a certain period following the completion and implementation of a project to analyze sustainability and the long-term impact of the project.

It is concerned with the continuity and maintenance of the activities and benefits beyond the project period (Asian Development Bank [ADB], 2010; Field & Kremer, 2008; MFA, 2012). The aim is to assess the implementation of the lessons learnt and recommendations from the end-of-project evaluation report (ALNAP, 2009; World Bank, 2010b). Although there are debates about the period to conduct an ex-post evaluation, studies suggest at least five years after completion of the project (Field & Kremer, 2008; MFA, 2012; UN-Habitat, 2014a).

Although monitoring and evaluation are independent stages in the life of a project, the two are complementary and usually combined to form one process. They are undertaken regularly to ensure that the aims and objectives of the project are met and to readjust programming based on the lessons learnt (UNDP, 2002). They are used to track progress and facilitate decision-making (Sera & Beaudry, 2007) by providing essential feedback for the successful implementation of a project (Baharoglu & Kessides, 2001). A well-designed monitoring and evaluation system determines whether a project achieved its objectives or not (World Bank, 2009a). Studies indicate that the partial failure of many slum upgrading initiatives is due to a lack of a reliable monitoring and evaluation system to sound an alarm when things go wrong (Imparato & Ruster, 2003). This makes it difficult to assess the real impact of a project and replicate it due to lack of an audit trail or record of the decision-making process and actions taken, what the situation was before the project started, and the changes brought about by the project (Imparato & Ruster, 2003). Shapiro (2002), UNDP (2002), and White (2011) summed up that comprehensive ex-post monitoring and evaluation assesses sustainability and the long-term impact of projects.

Traditionally, development specialists conducted monitoring and evaluation using standardized processes and tools to measure performance against pre-set indicators. However, no matter how the process was undertaken, the active participation of the targeted beneficiaries and the criteria used determine the success of monitoring and evaluation (Perten, 2011; World Bank, 2010b, 2010a). Meri (2016) observed that this calls for a need for participatory monitoring and evaluation (PME) to foster accountability and transparency.

PME refers to the active participation of stakeholders in monitoring and evaluation of a development project through sharing control over the content, process, and results, and using lessons learnt to take corrective actions to improve expected outcomes (Philip et al., 2008; World Bank, 2010b). Stakeholders are actively engaged in reflecting and assessing the progress of a project in the achievement of its results. This makes the results more inclusive and responsive to the needs of the target beneficiaries (World Bank, 2010a, 2010b). According to ALNAP (2009), Barasa and Jelagat (2013), and World Bank (2010a, 2010b), the success of PME depends on active community participation in the previous stages of the project.

The maintenance stage entails ongoing repairs, protection, servicing, training, renovations, and other processes needed to preserve and maintain a completed and implemented project (Arcila, 2008). Effective maintenance requires a clear agreement and proper coordination of the roles and responsibilities of the various stakeholders in terms of who does what, when, and how. This guides stakeholders to participate according to where they can contribute best based on their abilities (Barasa & Jelagat, 2013; UN-Habitat, 2014a; White, 2011). The role of the stakeholders depends on the nature of maintenance needed, the choice of technology used, the nature of skills and labour needed, the capacities of the stakeholders, and what they can contribute best (White, 2011). Arcila (2008) and Perten (2011) argues that oftentimes, where there is a need for fewer resources and technical skills, the local community should conduct day-to-day maintenance as a way of empowerment and creation of income-generated opportunities. However, where there is a need for more resources and technical skills, the external agency facilitates the process and conducts major repairs and maintenance.

The success of the maintenance stage is the most visible form of sustainability of a project – high maintenance indicates and enables sustainability of a project, and vice versa. A sustainable project identifies and corrects defects, meets new requirements, and easily copes with the changing environment. Effective maintenance depends on the extent to which stakeholders participated in the planning stage where roles and responsibilities were defined and assigned (Morfaw, 2014; UN-Habitat, 2014a). However, AusAID (2010) opines that many external

agencies pay limited attention to the operation and maintenance of a project after completion, which adversely affects sustainability.

In summary, studies show that the success of slum upgrading depends on the active participation of stakeholders in all the above stages of a project (Mansuri & Rao, 2004). However, most of the studies have concentrated on participation up to implementation and completion of a project. Thus, there is less attention on the post-implementation stages (Lall et al., 2008; Marx et al., 2013). A review of literature has shown a deficiency in studies on community participation in post-implementation stages of monitoring, evaluation, and maintenance (Imparato & Ruster, 2003; Luvenga et al., 2015). In addition, many studies have attempted to use standardized processes and tools to conduct monitoring and evaluation, and maintenance without including the perceptions and perspectives of the project beneficiaries who are the primary consumers of the interventions. The beneficiaries are in a better position to assess progress and impact of the implemented interventions. This study filled this gap through objective one, which sought to assess the level of community participation in the post-implementation monitoring and evaluation, and maintenance of the IUHP and BiP: PUP projects as perceived by the project beneficiaries.

2.5 Concept of Sustainability of Slum Upgrading

There are diverse definitions of the concept of sustainability with varied interpretations leading to ambiguity, vagueness, and liability to arbitrariness (Jabareen, 2008). It comes from the broader concept of sustainable development, which focuses on the need for integrated decision-making that balances economic and social needs with the regenerative capacity of the natural environment. Sustainable development refers to “the development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs” (Cronjé & Chenga, 2009; Drexhage & Murphy, 2010).

In recent times, the concept of sustainability is also applicable in development projects (Daneshpour, 2015; Gareis et al., 2009; Silvius et al., 2009). In this context, sustainability refers to the long-term viability of a complete and implemented development project to continue and

maintain its intended activities and benefits beyond the project period and/or after reduction or withdrawal of external major funding and other forms of support (Luvenga et al., 2015; Wasilwa, 2015). Luvenga et al. (2015) observed that it is the capacity of a project to continue to function and deliver its intended activities and benefits beyond the project period. It is concerned with what happens after the completion of a project and whether the beneficiaries will continue with its intended activities and receive the same benefits.

The concept of sustainability has two perspectives including static sustainability and dynamic sustainability (Field & Kremer, 2008). Static sustainability is about the continuation and maintenance (conservation) or expansion of the activities of a project and flow of the same benefits to the same target groups beyond the project period (Luvenga et al., 2015; UN-Habitat, 2012). Dynamic sustainability is about the continuation of local action stimulated by the project and generation of successor services, initiatives, activities, and benefits resulting from the building of the local capacity attributed to the completed project. Thus, the beneficiaries are capable of continuing to produce or expand activities and benefits beyond the project period as long as the problem still exists. Alternatively, the same target groups can use the activities and benefits of the project in different or changing contexts in the long term (Field & Kremer, 2008; Luvenga et al., 2015; UN-Habitat, 2012).

In general, sustainability is a multi-dimensional concept encompassing different features and forms depending on the nature of the project, priorities defined, and choices made by the project beneficiaries (Field & Kremer, 2008; Marx et al., 2013). Thus, Lyons et al. (2001) and Schenck and Louw (1995) consider sustainability as a measure of the long-term viability of a development project and the establishment of “socially sustainable conditions.” Based on this, sustainability has three dimensions namely project longevity (project sustainability), long-term impact to individual beneficiaries (personal sustainability), and long-term impact to entire community (community sustainability).

Project sustainability is about the longevity of a project measured by determining how long it has survived since completion and its general outlook reflected in the hard and soft skills acquired to

operate and maintain it in the long term. It is the long-term viability of a project after an interventionist has left or withdrawn or plays a significantly reduced role than initially. The benefits of the project act as an incentive for the beneficiaries to carry on and maintain or continue the project or use it as a springboard for future gains (Lyons et al., 2001; Schenck & Louw, 1995). Community sustainability is concerned with the long-term positive impacts of a project on the entire community through the empowerment of members and harnessing the momentum for future development initiatives. It requires active participation and assessment of perceived benefits to the community (Lyons et al., 2001; Schenck & Louw, 1995). Personal sustainability focuses on the long-term positive impacts of the project on individual beneficiaries in terms of enhanced well-being and empowerment to take charge of their own lives. It is measured by how the project continues to benefit individual beneficiaries through capacity building, empowerment and well-being (Lyons et al., 2001). This study sought the perceptions of the project beneficiaries about the dimensions of the sustainability of the IUHP and BiP: PUP projects under review.

2.5.1 Methods of Evaluation of Sustainability of Slum Upgrading

Sustainability emphasizes the functionality of a project beyond the project period in terms of the ability to maintain activities and a flow of benefits over time (ADB, 2010). Several studies have attempted to evaluate the sustainability of development projects. However, there is a lack of sufficient details and consensus on the required length of the follow-up period for evaluation after completion of a project (Jansz, 2011). This is because the impacts take a longer time to manifest (Marx et al., 2013; Lall et al., 2008; Takeuchi et al., 2008) with the benefits materializing after several years of changes. This is usually not evident in the short-term period. Thus, although end-of-project evaluation, which is a relatively short follow-up study, may detect changes, sustainability is not automatic. Many of the immediate benefits may later fall in disrepair or fail to produce lasting benefits (Barakat et al., 2020; Doe et al., 2020; Field & Kremer; 2008; Sharma et al., 2020; UN-Habitat, 2009).

As a result, the evaluation of sustainability should be conducted after a certain period following the completion of a project i.e. ex-post evaluation (Field & Kremer, 2008; MFA, 2012).

However, while studies generally report on the timing of the baseline, mid-term and end-of-project evaluations, there is a lack of consensus on the required length of follow-up period for ex-post evaluation of sustainability (UN-Habitat, 2014a). Many studies (such as Field & Kremer, 2008; UN-Habitat, 2014a) suggest conducting the ex-post evaluation at least five years after completion of the project. These studies argue that such an interval period allows for the impact to be fully recognized, more insights and implementation of lessons learnt in informing future projects.

The ADB recommends a five to ten years period after completion of a project. This is because projects achieve the maximum flow of benefits at different times after completion. Some achieve this soon after they begin to operate, which may gradually decline thereafter, while others take a relatively long consolidation period to achieve the same (ADB, 2010). The Operations Evaluation Department of the World Bank conducts impact evaluation of its project between five to eight years after the close of loan disbursement focusing on the continued delivery of services and production of benefits, maintenance of physical infrastructure, long-term institutional capacity, and political support.

Concerning slum upgrading, the Urban Partnerships for Poverty Reduction Project in 2008 in the slums of Dhaka city, Bangladesh, evaluated its sustainability in 2014 (six years after completion) and noted significant improvement in the provision of basic services (UPPR, 2013, 2015). Taylor (1987) observed that it took between 2 and 4 years for the Kampung Improvement Programme in Jakarta, Indonesia, to detect changes in income after completion.

In addition to the length of the follow-up period, there is no agreement on a universal assessment tool (method) for evaluation. This is because different projects have unique dimensions with different goals and objectives considered in choosing the type of measurement to use. This has enhanced the need to develop a method to evaluate sustainability (Sanchez & Lopez, 2010; Silvius & Schipper, 2012; Singh et al., 2012). Thus, there are several methods used in the evaluation of the sustainability of development projects; each having certain unique dimensions and indicators to be used (Böhringer & Jochem, 2007; Sanchez & Lopez, 2010). The project

beneficiaries quantify these indicators on a Likert scale representing a continuum from no sustainability to maximum sustainability. The methods aggregate the individual scores of all the indicators of each dimension to form a single numerical composite index score known as sustainability index score for the project (Nardo et al., 2005). The higher the composite index score, the higher is the level of sustainability of a project, and vice versa (Sanchez & Lopez, 2010; Singh et al., 2012). Nardo et al. (2005) and Saisana and Tarantola (2002) added that the composite index score is transformed into ordinal categories to facilitate differentiation between the levels of sustainability among the beneficiaries.

This study summarizes some of the common methods used to evaluate the sustainability of development projects. For example, an international NGO known as Water Aid developed a “Sustainability Snapshot” as a tool to evaluate sustainability. The tool assesses three indicators of sustainability including financial, technical skills, and equipment and spare parts, measured on a three-point scale to form a composite sustainability index score (Sugden, 2003). According to ADB (2010), the Asian Development Bank assesses project sustainability using four determinants including economic, financial, technical, and institutional capacity and ownership. Each determinant has various indicators rated on a four-point Likert scale from *the most likely, likely, less likely to unlikely*.

The Sustainability Assessment Matrix assesses and ranks the success of five phases of a project including needs assessment, conceptual design and feasibility, design and action planning, implementation, and operation and maintenance. The matrix considers five factors influencing each phase including socio-cultural respect, community participation, political cohesion, economic sustainability, and environmental sustainability. Each matrix element (a particular phase and the associated factor) is rated on a four-point Likert scale with the total score aggregated into a composite index score ranging from 20 to 100 (Mcconville & Mihelcic, 2007). The UNDP and World Bank assess the sustainability of water and sanitation programmes using scoring based on three key determinants including technical, institutional and social. Each determinant has five indicators including physical condition, operation and maintenance, financial management, consumer satisfaction, and willingness to sustain. Each indicator rated on

a Likert scale and the total scores of all determinants form a composite index score of the sustainability of the project.

In summary, the literature review indicates that end-of-project evaluations dominates studies on slum upgrading and do not address the issues of sustainability. Ex-post evaluations of sustainability are rare (for example, Marx et al., 2013; Soyinka et al., 2016; UN-DESA, 2013). In addition, most of the studies do not consider the assessment of sustainability through the perceptions of the project beneficiaries. This raises questions about the duration required and dimensions considered to assess sustainability of slum upgrading through the perceptions of the project beneficiaries. This study filled this knowledge gap through objective two, which assessed the level of sustainability of the IUHP and BiP: PUP projects implemented 15 years ago as perceived by the project beneficiaries. The study adopted the three dimensions of sustainability proposed by Lyons et al. (2001) and Schenck and Louw (1995) namely project sustainability, personal sustainability, and community sustainability rated on a five-point Likert scale.

2.6 Participation in Post-Implementation and Sustainability of Slum Upgrading

The World Bank experience shows that the sustainability of slum upgrading is contingent upon community participation in decision-making in all stages of the project (Luvenga et al., 2015; World Bank, 2010a). The targeted slum residents must have an opportunity to participate in addressing specific issues affecting them. They possess useful local knowledge, experience, and potentials required in slum upgrading for sustainability (Cities Alliance, 2014; UN-Habitat, 2011b). Studies indicate that there is a significant and strong positive correlation between community participation and the sustainability of a development project. Community participation helps in capacity building and empowerment of the beneficiaries for collective action, maintenance, and sustainability (Barasa & Jelagat, 2013; Chenga et al, 2006). According to Barasa and Jelagat (2013), this means that greater, broader, deeper, and active participation increases the chance of sustainability.

Community participation is important where the external agency reduces or withdraws major funding and other forms of support after completion of the project (Ostrom, 2010). It encourages ownership, responsibility, empowerment, accountability, and transparency in taking corrective

actions to improve performance and outcomes (ALNAP, 2009; Harvey & Reed, 2007; McIvor, 2008; Mukunga, 2012). The beneficiaries develop a sense of ownership, which enables them to continue and maintain the activities and benefits beyond the project period (Marsden, 2007). This increases efficiency and effectiveness of the project in meeting its objectives (Chappel, 2005) and chances of knowledge transfer and replication (Bigdon & Korf, 2004). Khwaja (2003) observed that there is better maintenance and sustainability of community-managed projects compared to those sponsored by local governments due to the participation of the beneficiaries in decision-making.

Community participation in the post-implementation stages of monitoring, evaluation, and maintenance significantly and positively influence sustainability (ALNAP, 2009; World Bank, 2010b). A community has the power to decide whether to maintain the introduced and implemented activities and benefits of a slum upgrading project or not (Noori, 2017). Many donor organizations are concerned about the failure of development projects after completion and reduction or withdrawal of external support. They attribute this to a lack of sufficient community participation in the post-implementation stages (Picciotto, 2002). Lack of proper strategies by the exiting external agencies compromises sustainability, especially in cases of low capacity building and empowerment of the beneficiaries (Barnes et al., 2014; Ndou, 2012). Lack of emphasis on post-implementation stages limit the ability to assess the real impact of a project and replicate it due to lack of an audit trail or record of the decision-making process and actions taken, the pre-project situation, and changes brought about by the project (Imparato & Ruster, 2003). Thus, UN-Habitat (2014a) observed that for the sustainability of a project, there is a need to conduct comprehensive ex-post monitoring, evaluation, and maintenance and assess the extent of community participation in these stages.

However, the influence of community participation in post-implementation stages on sustainability is not always automatic. The relationship depends on the nature of the project, nature of decisions, participation in decision-making, power dynamics, technicality in the project, the willingness of stakeholders to work together, and policy and structures to support participation (Khwaja, 2004; Mansuri & Rao, 2004). For example, where decisions need more

local knowledge, there is a positive correlation between community participation and sustainability. The type of technology used in the operation and maintenance of project influences sustainability. Projects requiring technical decisions lower community participation in decision-making and negatively affects their sustainability (Khwaja, 2004; Mansuri & Rao, 2004; Mwakila, 2008). Khwaja (2004) opines that the level of organizational and managerial skills in the local community may promote or inhibit sustainability. For example, little or no organizational and managerial skills for the continuation of the project may lead to mismanagement, slow down or contribute to the failure of the project.

The nature of the community participation reflects a specific project and the prevailing context. Therefore, there is no one uniform level of community participation for the wholesale application of any best practices to all projects (Mansuri & Rao, 2004). Similarly, community participation is about power relations, which operate in a socio-political context with obstacles such as dependency syndrome, elite capture, gender inequality, the culture of silence, and insufficient funding and support. These obstacles negatively affect participation and the sustainability of projects (Kumar, 2002). According to Barnes et al. (2014), Kealey et al. (2006), and Ndou (2012), power relations and politics influence the nature and level of community participation. In such cases, promoting participation may be misconstrued to mean a challenge to the power relations and politics, which affects the sustainability of the project.

From the literature review, community participation in post-implementation stages focuses on the maintenance and preservation of the activities and benefits beyond the project period, which are the pillars of sustainability. Community participation in these stages is important since the targeted beneficiaries are the ones to decide whether to continue and maintain the activities and benefits beyond the project period or not. However, most studies focus on end-of-project evaluations, which do not address the link between community participation in post-implementation stages and sustainability of slum upgrading. This study addressed this deficiency through objective three, which sought to determine the influence of the community participation in the post-implementation monitoring and evaluation, and maintenance on sustainability of the IUHP and BiP: PUP projects through the perceptions of project beneficiaries.

2.7 Impact of Slum Upgrading on the Living Conditions of Slum Dwellers

Studies indicate that sustainable slum upgrading has positive long-term impacts on the living conditions in slum settlement (Mansuri & Rao, 2013; Mwau, 2013; UN-Habitat, 2006; UN-Habitat, 2021b). An impact is the ultimate result or higher-level goals that a project or programme contribute in the achievement of its overall objective (UN-Habitat, 2012). An impact evaluation compares the group that received the intervention (treatment group) and a group that did not receive the intervention (control/comparison group). The intervention is responsible for any difference between the two groups (Field & Kremer, 2008, 2005). Field and Kremer (2005, 2008) and UN-Habitat (2012) observed that impact evaluations can be either experimental via a randomized controlled trial or quasi-experimental for comparison of the treatment group and control group that have similar observable characteristics. The results may be positive or negative, primary or secondary, direct or indirect, long-term or short-term, and intended or unintended.

Literature review indicates that impact evaluation compares the group that received the intervention (treatment group) and a comparable credible group that did not receive the intervention (control/comparison group) in a before-and-after study (Duflo & Kremer, 2005; Field & Kremer, 2008). According to Field and Kremer (2008) and UN-Habitat (2021b), impact evaluation seeks to answer an essentially counterfactual question: what would have happened to the treatment group (beneficiaries) if the intervention did not exist? What would have happened to the control/comparable group (non-beneficiaries) if it had benefited from the intervention?

The most common strategy in impact evaluation studies is the Difference-in-Difference (DiD) technique (Bertrand et al., 2004; Field & Kremer, 2008). Field and Kremer (2008) argues that the method is a quasi-experimental approach that compares the changes in outcomes over time between a treatment group and a credible comparison/control group. It is used to estimate the impact (or effect) of a specific intervention or treatment by comparing the changes in outcomes over time between a treatment group and a credible comparable /control group. It uses longitudinal data from the two groups to obtain an appropriate counterfactual to estimate a causal

effect (impact) in two periods - before and after the intervention. The main assumption is that there should be no other programme implemented during the same period of the intervention.

According to Field and Kremer (2008) and Lechner (2011), the DiD is derived by calculating the before-after difference in the outcome (Y) for the treatment group (B-A). In comparing the same group to itself, this difference controls for factors that are constant over time in that group. Then there is calculation of the before-after difference in the outcome (Y) for the comparison/control group (D - C). This difference captures the time-varying factors in the control group exposed to the same set of environmental conditions as the treatment group. Finally, calculate the difference between the difference in outcomes for the treatment group (B - A) and the difference for the comparison group (D - C). This is the difference-in-differences: $(DiD) = (B-A) - (D-C)$. This difference “cleans” all time-varying factors from the first difference by subtracting the second difference from it. This leaves us with the impact estimation or the difference-in-differences.

However, Bertrand et al. (2004), Imparato and Ruster (2003), and UN-Habitat (2021b) observes that in slum upgrading, interventions take place in specific areas, individual are screened for participation in the intervention and the decision to participate is often voluntary. As a result, it is difficult to get a credible control group and any differences may be attributed to pre-existing differences (selection bias) and the impact of the intervention. Because of the selection bias, the control group may lack the hidden qualities that qualified the treatment group for the intervention. One cannot simply compare the treatment and control groups due to selection bias and differences in observable and unobservable characteristics of the neighbourhood or individuals or between the groups. Any comparison of the two groups is likely to produce very misleading results. In such cases, Field and Kremer (2008) and UN-Habitat (2021b) recommends the use of ex-post cross-sectional data of a treatment group only to approximate longitudinal data with retrospective questions. This requires anchoring questions around specific events/aspects of an intervention that can allow recall of the pre-project, project and post-project periods – asking specific questions before and after the interventions.

Long-term impact refers to the ultimate consequences (results) or higher-level goals contributed by a project, action or programme in the achievement of its overall objective in the post-project or programme period. In slum upgrading, the long-term impact on the living conditions is determined by the extent to which a project addresses the five key characteristics of a slum including inadequate access to water, inadequate access to sanitation, poor structural quality of housing, lack of security of tenure, and overcrowding (UN-Habitat, 2014a). Cronin (2011) and UN-Habitat (2009a) observed that these characteristics are largely quantifiable and used to assess progress. Each characteristic specifies ‘acceptable’ conditions, for classifying a slum household.

The UN Economic and Social Council (UNESOC) in 2002 considered access to safe, improved, affordable and continuous water supply as a human right essential for sustenance of human lives (UNESOC, 2003). However, slums are often characterized by a lack of access to adequate water and sanitation infrastructure and networks, especially private household connections (UN-Habitat, 2015b, 2016). In cases where water infrastructure and networks exist, access is inadequate and uneven, and availability is intermittent (Pierce, 2017). The common sources of water in slums include water vendors (carters, tanker truckers, and kiosks), community-managed water projects, public standpipes, boreholes, and wells (Kariuki & Schwartz, 2005; Kjellén & McGranahan, 2006). An estimated 2 billion people living in the slum and informal settlements suffer from water stress (UN-Habitat, 2005b). In the year 2008, 40.0% of slum dwellers in SSA used unimproved water (WHO & UNICEF, 2011). In Kenya, 5.0% of urban poor households had a residential water supply with only 19.0% of the households in slums in Nairobi having water connections (Gulyani & Talukdar, 2008; Gulyani et al., 2005). More than 80.0% of the population in the slums of Nairobi and Abidjan relied on other sources of water other than household connections including kiosks, water resellers, and other small-scale providers (Gulyani & Talukdar, 2008; Obrist et al., 2006). Jalan and Ravallion (2003) observe that inadequate access to improved water and sanitation exposes slum dwellers to adverse health consequences, particularly diarrheal diseases.

In addition to limited water supply, 2.4 billion people living in the slum and informal settlements worldwide lack or have poor access to improved sanitation (UN-Habitat, 2005b). This is a major

public health challenge in developing countries (Marx et al., 2013), which have inadequate access to water, poor sewerage systems, poor or lack of toilet facilities, poor waste management, and disposal, open defecation, among others. This has contributed greatly to adverse health and environmental risks (Jalan & Ravallion, 2003; UN-Habitat, 2003a). According to WHO and UNICEF (2011), SSA has the least access to improved sanitation (44%), followed by Southern Asia (57%), and Eastern Asia (61%). In these regions, about 30.0% of the urban population share sanitation facilities with open defecation in Southern Asia (14.0%), SSA (8.0%), South-Eastern Asia (8.0%), and Eastern Asia (6.0%).

In Kenya, the Kibera slum in Nairobi has open sewer lines, a high number of people sharing the limited available and unsanitary toilet facilities (Corburn & Karanja, 2016), while others use flying toilets (Cronin & Guthrie, 2011). The sharing of sanitation facilities contribute to adverse health outcomes due to inadequate cleanliness (Fuller et al., 2014; Heijnen et al., 2014), lack of privacy, and high-security risks (Corburn & Karanja, 2016; Mcgranahan, 2015; Water and Sanitation for the Urban Poor - WSUP, 2018). Pit latrines are the most common form of sanitation in slums. However, lack of enough space limits their proper use and replacement including safe and hygienic pit emptying (Chipeta et al., 2017; Jenkins et al., 2015). WSUP (2018) add that inadequate and uncontrolled disposal of solid waste causes contamination of surface and groundwater.

The role of slum upgrading in improving access to water has two dimensions including accessibility (in terms of the location of the water source and affordability) and reliability (in terms of the duration and predictability of the availability of water). Studies suggest that access to improved water and sanitation through slum upgrading has a positive impact on the health and socio-economic well-being of the slum dwellers (Clasen, Bostoen et al., 2010; Clasen, Roberts et al., 2006; UNESOC, 2003). It also reduces the time and effort devoted to managing water and waste. The saved time can be re-located for other productive activities such as engaging in IGAs and providing more time for childcare, socialization, and educational activities (Evans, 2005; Fewtrell & Colfrod, 2004; Galiani et al., 2005). Hutton and Haller (2004) added that access to improved water and sanitation is important in achieving the SDGs in slum settlements.

Another daunting challenge in slum settlement is the provision of adequate structural quality housing. The majority of the residents live in substandard and informal housing often built using non-permanent materials (UN-Habitat, 2002a). For example, in the year 2016, an estimated one billion slum residents lived in substandard and informal housing globally. This negatively affected their health, safety, prosperity, and opportunities (UN-Habitat, 2016b). UN-Habitat (2008a) and Unger and Riley (2007) observed that most houses in slums in SSA are informal, dilapidated, of poor structural quality, highly precarious, and often located in environmentally and geographically hazardous areas, which exposes residents to diseases and injuries.

The role of slum upgrading is to create the necessary enabling conditions that increase access to the improved structural quality of housing. The aim is to provide affordable low-cost shelter that guarantees adequate privacy, space, physical accessibility and security, security of tenure, structural stability and reliability, and basic infrastructure (Wakely & Riley, 2011). Slum upgrading empowers the slum dwellers to renovate and develop their housing with their resources (Painter et al., 2006) through support of incremental housing and/or provision of good quality public housing (Gilbert, 2012; Wakely, 2014). Slum residents possess the ability to foster meaningful improvement in their housing conditions (Tuner, 1976) through capacity building and empowerment (Turkstra & Popal, 2010). Through economic empowerment, slum upgrading enables residents to regularize and legalize their security of tenure, which facilitates private house investment (Field, 2005; Galiani & Schargrodsky, 2010). For example, UN-Habitat (2008c) highlights the Kibera Slum Upgrading Initiative that created saving schemes and linked slum dwellers to credit institutions for house construction or buying of land.

A good structural quality housing provides sufficient living area for the household members. Slum settlements are characterized by overcrowding in dilapidated housing structures with high occupancy rates and number of single-room units (UN-Habitat, 2003b, 2004). This increases pressure on basic services, lowers quality living standards, and leads to unregulated housing conditions, which expose residents to transmission of communicable diseases, and increase social evils, and susceptibility to external shocks such as natural disasters (Unger & Riley, 2007). For example, Achieng (2009, as cited in Cronin & Guthrie, 2011) observed that majority of the

houses in the Silanga area of Kibera slum in Nairobi were overcrowded exposing residents to diseases and limited freedom of movement and right to privacy.

Security of tenure is the cornerstone of the right to the adequate structural quality of housing. It is the key that unlocks investment in home improvement and motivates residents to maintain new infrastructure (Berger, 2006; UN-Habitat, 2003b). However, majority of slum dwellers lack security of tenure, which leads to informal settlements (Cronin, 2011; UN-Habitat, 2011a) that prevents them from investing in housing and other livelihood opportunities (Berger, 2006). In many cases, lack of security of tenure is *prima facie* evidence of illegality and slum occupation (Cronin, 2011). Effective slum upgrading depends on guaranteed security of tenure (Berger, 2006; UN-Habitat, 2003b), which helps to overcome the fear of eviction and encourages self-investment in houses and basic infrastructure (UN-Habitat, 2001b). Berger (2006) argued that slum upgrading creates an enabling environment for the legalization and formalization of land and property rights in favour of slum residents. This is critical in facilitating home construction and provision of basic municipal services that requires evidence of security of tenure.

Although there is prolific literature on the impact of slum upgrading on the living conditions, most of the available studies do not focus beyond the project period and do not consider the perceptions and perspectives of the beneficiaries. Instead, they focus on short-term impact recorded at the end of the project. Therefore, integrated empirical studies focusing on the perceptions of the project beneficiaries about long-term impact of slum upgrading in addressing each of the five key characteristics of a slum remain rare. This study filled the knowledge gap through objective four, which sought to assess the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the living conditions in the selected slum settlements. The emphasis on the extent to which the two projects addressed the key characteristics of the living conditions in the project sites from the perception of the beneficiaries.

2.8 Impact of Slum Upgrading on Livelihoods of Slum Dwellers

Conventionally, slum upgrading focused more on addressing the physical living conditions of a settlement depicted by the five characteristics of a slum (UN-Habitat, 2008a, 2021b). However, this has failed to address the core cause of slum settlement, which is poverty and limited livelihood options. Therefore, to augment the improved physical living conditions and contribute to sustainability and long-term impact, slum upgrading should also aim at improving the livelihoods of the slum residents. This is because the precarious living conditions in slums contribute to the fragile livelihoods of the slum residents. In such cases, any misdirected slum upgrading intervention could destroy the livelihoods of the residents and worsen the living conditions (UN-Habitat, 2008a; WHO, 2005).

A livelihood is a capability, asset (including material and resources), and/or activity that an individual or household engage in as a means of living or survival to improve well-being (DFID, 2002; Rakodi, 2002). It entails more than income and incorporates a much wider range of activities such as gaining and retaining access to resources and opportunities, dealing with risks, negotiating social relationships, and managing social networks and institutions (de Haan & Quarles van Ufford, 2002; DFID, 2002). According to DFID (2002), a sustainable livelihood is a livelihood that can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets both now and in the future while not undermining the natural resource base. Livelihoods depend on the assets portfolio of a household. These assets are resources that individuals and households draw upon to develop livelihood strategies and build livelihoods (Ellis, 2000; Rakodi, 2002). A combination of assets and opportunities by an individual or household to pursue or achieve beneficial livelihood outcomes that meet the livelihood objectives form a livelihood strategy (DFID, 2002). Kaag et al. (2004), Meikle (2002), and Owuor and Foeken (2006) observed that a household construct a livelihood strategy based on its choices, preferences, circumstances, and the changing contexts in which it lives.

Studies categorize livelihood strategies into two according to the period namely coping strategies and adaptive strategies (Kaag et al., 2004). Coping strategies are short-term responses to a specific shock or stress (such as job loss). For example, in case of temporal loss of employment

(a shock or stress), the coping strategy may include renegotiating deferred rent payments or buying basic needs on credit (Majale & Albu, 2002). Adaptive strategies, on the other hand, are long-term responses to prolonged shocks and stresses to build asset bases (Kaag et al., 2004). For example, the adaptive strategy for prolonged lack of employment opportunities (shock or stress) may include building informal saving groups and social capital for future benefits (Majale & Albu, 2002). de Haan (2000) and de Haan and Quarles van Ufford (2002) added that the choice of livelihood strategies is a dynamic process that involves combining assets to meet changing needs.

Urban livelihoods are fundamentally different from rural livelihoods due to variations in the types of economic activities, availability of basic services, population density, and goods and services exchanged (Brown, 2012). They are defined in a large part by the context, opportunities, and constraints under which urban residents operate (Hendriks, 2011; Verrest, 2007). The indicators of urban poverty include inadequate income, asset base, access to services, social safety nets, and voicelessness and powerlessness among the urban poor. Access to goods and services in urban areas is exclusively dependent on cash transactions and the ability to buy at given prices and income. The urban poor live and work in highly deprived environments with fewer social networks (Brown, 2012; Meikle, 2002). In addition, the urban poor often lack access to common property resources such as water, which are comparatively more available in rural areas (Hendriks, 2011). According to Hossain (2005), Rakodi (2002), and Owuor (2011), and economic activities form the basis of any livelihood strategy in urban areas. The common strategies include diversification of income generation opportunities, skills development, urban-rural linkages, urban farming, social capital, a house a reference from where to pursue a livelihood, and so forth.

Livelihood strategies adopted determine the nature and expected livelihood outcomes. A livelihood outcome refers to the results or output of the adopted livelihood strategies based on the vulnerability context and asset bases of a household or an individual (Kaag et al., 2004). Ellis (2000) and Rakodi (2002) categorize livelihood outcomes into positive and negative. Positive livelihood outcomes allow people to build their asset bases as a buffer against shocks and

stresses including improved incomes; increased well-being, reduced vulnerability, improved food security, and sustainable use of natural resources. Negative livelihood outcomes deplete asset bases, thereby increasing vulnerability to shocks and stresses. For example, the sale of properties to buy food during times of food insecurity increases vulnerability in urban areas.

Slum upgrading creates an enabling environment for expansion and strengthening of the livelihood strategies and increase positive livelihood outcomes for long-term improvement in well-being. Therefore, improved livelihoods augment improved physical living conditions and contribute to sustainable slum upgrading (Majale, 2003a; UN-Habitat, 2008a; WHO, 2005). According to UN-Habitat (2008a), slum upgrading builds permanent structures, improve access to basic services, and builds market shades, which creates opportunities to diversify and strengthen economic activities. For example, the Kibera Slum Upgrading Programme facilitated development of livelihoods through capacity building and empowerment of the slum dwellers, which improved access to credit for investment in IGAs and housing.

Slum upgrading plays a critical role in improving infrastructure, which in turn, improves the productivity of existing enterprises, promotes the establishment of new ones, and creates potential employment opportunities (UN-Habitat, 2008a; UN Millennium Project, 2005). Some of the slum upgrading projects adopts local resource-based labour-intensive approaches in the provision of infrastructure to create income-generating opportunities (UN Millennium Project, 2005). Slum upgrading enables residents to acquire security of tenure, which improves access to livelihood opportunities such as credit to pursue other opportunities (Berger, 2006). Muller and Mitlin (2007) argued that slum upgrading encourages mobilization and formation of strong local institutions, which create social capital used in pursuit of livelihoods. Social capital through the formation of saving schemes increases access to affordable credit. Many external agencies tap into social capital and networks to plan and implement slum upgrading. The saving schemes act as a starting point for the mobilization of slum residents for slum upgrading. For example, saving schemes in Namibia mobilized and brought the urban poor together for slum upgrading.

Slum upgrading expands and diversifies IGAs as an overarching strategy for the poor to generate income and diversify the degree of choice (Hossain, 2005; Owuor, 2005, 2006). Diversification reduces vulnerability to specific stresses and shocks. Majority of the urban poor are opportunistic, diversifying their sources of income and drawing on a portfolio of activities, especially in the informal sector (Owuor, 2005). However, Owuor (2005) and Owuor and Foeken (2006) observed that the scope of diversification varies according to the degree of resilience and vulnerability. For example, the use of urban farming as a source of income, food security, and survival strategy.

In summary, although there is adequate literature on urban livelihoods in general, there are limited empirical studies on the impact of slum upgrading on livelihoods in the post-project period. This is because livelihood changes take place over a long-term period with the benefits materializing after several years of the changes. This study filled this knowledge gap through objective five that sought to assess the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the livelihoods in the selected slum settlements.

2.9 Perception of Project Beneficiaries

Perception refers to an individual's subjective evaluation and interpretation of collected sensory information (stimuli) about a particular subject matter by assigning order and meaning to it based on personal awareness, experiences, feelings, attitudes, culture, opinions and judgements (Dewey, 1973). Several studies in different disciplines have applied the concept of self-perception including community development (Stedman, 2003), tourism development (AlWaer et al., 2008), risk (de Dominicis et al., 2015), environment (Badola et al., 2018; Wang et al., 2014), and sustainability (Lee, 2019).

In project management, studies on the sustainability and impacts of development projects from the perception of the beneficiaries have been notable on two distinctive approaches namely synchronic (at a specific single point in time – cross-sectional) and diachronic (changes over time – longitudinal) (Silva 2014). Scholars have suggested that an individual's perception is a key element in supporting sustainability of a project (Lee, 2013; Lee & Jan, 2019). Therefore,

the interest is in the self-perception of the project beneficiaries and its connection with various outcomes, including sustainability and long-term impact of an implemented intervention (McLeod & Doolin, 2012; Stedman, 2003; Williams, 2015). The project beneficiaries have the power to decide whether to maintain the introduced and implemented interventions or not (Noori, 2017). Ika (2009), McLeod and Doolin (2012), and Williams (2015) observed that the focus is on the evaluation and interpretation of success, sustainability and long-term impact as perceived by the project beneficiaries because of their critical role in the post-project period.

According to Agboeze and Nwanko (2016), studies indicate that there are two angles to perception of impact of a development project namely perception-as-conceived and perception-as-observed. The perception-as-conceived is concerned with the impacts perceived as future antecedents of proposed development project in a particular location resulting from experiences of neighbouring communities, other external experiences or imposed convictions from within and/or outside the community. On the other hand, perception-as-observed is concerned with the perceived impacts from existing development project as experienced by the beneficiaries.

However, studies indicate that assessment of self-perception is complex and open to distortions, inaccuracies and biases, which may lead to self-overestimation or underestimation (Anderson & Spataro, 2005). This is because individuals tend to rate their own relevance higher than others do (Nilsen & Campbell, 1993; Yammarino & Atwater, 1993). In addition, psychological or emotional attitudes toward community development may not actually be reflected in quantitative research methods that are commonly used (Lee & Jan, 2019). To overcome this shortcoming, Turner and Müller (2005) observed that researchers are encouraged to use mixed-method research approaches integrating quantitative and qualitative approaches to validate the results. Despite the importance of self-perception, there are limited studies about project beneficiaries, how they evaluate the success, sustainability and impact of the implemented interventions. This raises questions about the self-perceptions of project beneficiaries.

In this study, the researcher was interested in the perceptions of the project beneficiaries about their participation in the post-implementation stages, sustainability of the implemented

interventions, and impact on the living conditions and livelihoods in the two project areas. The study assessed the perceptions based on the notion that the project beneficiaries are the primary consumers of the implemented interventions and thus they have an intrinsic motivation to ensure sustainability and impacts. The sample project beneficiaries expressed their opinions based on experiences and knowledge about the activities and benefits of the two projects. For impact, the sample project beneficiaries compared the situation before and after the implemented of the two projects measured on a five-point Likert scale showing a continuum from the lowest rating to the highest rating.

2.10 Summary of Literature Review and Gaps in Knowledge

A review of the literature reveals that there is a large body of knowledge on slums, reasons for their existence, challenges, and policy responses adopted (UN-Habitat, 2003b, 2007a, 2009a). Slum upgrading has been identified as the most viable and sustainable strategy to address the challenges of slums and improve the living conditions and livelihoods of the residents (Lall & Lall, 2007; Mansouri & Rao, 2013; UN-Habitat, 2009a). Literature indicates that slum upgrading has registered varied positive impacts in different countries (Franklin, 2020; UN-Habitat, 2006; World Bank, 2009). However, most of the studies are end-of-project evaluations, which are relatively short follow-up studies not addressing the issues of post-implementation, sustainability and long-term impact of slum upgrading (Lall et al., 2008; Marx et al., 2013; Takeuchi et al., 2008; UN-Habitat, 2009a). Studies on ex-post evaluations of the sustainability of slum upgrading are few and far between (for example, Lall et al., 2008; Marx et al., 2013; Soyinka, et al., 2016; Takeuchi et al., 2008; UN-DESA, 2013).

The literature review also shows that the success of slum upgrading depends on active community participation in all the stages of the project (Cities Alliance, 2021a; Kwena, 2021; Luvenga et al., 2015). However, most of the studies focus on participation up to the implementation stage with less attention on post-implementation stages of monitoring, evaluation, and maintenance (Kwena, 2021; Mahonge, 2013; Marx et al., 2013), which are the pillars of sustainability of slum upgrading (Danso-Wiredu & Midheme, 2017; Kwena, 2021; Luvenga et al., 2015; Noori, 2017; Seokwoo et al., 2020). This is especially the case since slum

upgrading is a spatially localized action that requires a local public response, relevance of local knowledge, and good communication and sharing local knowledge. Beneficiaries are intrinsically motivated to ensure sustainability of the interventions that benefit them (Cities Alliance, 2021b; Danso-Wiredu & Midheme, 2017). However, a number of studies have attributed failure of community development projects, including slum upgrading, to inefficient post-implementation monitoring and evaluation, and maintenance and lack of or inadequate participation of the beneficiaries in the process (Barnes et al., 2014; Ndou, 2012). Moreover, the available studies focus on the short-term impacts of slum upgrading recorded at the end of a project. There is limited documented of the impacts in the post-project period. Therefore, there were limited integrated empirical studies focusing directly on the long-term impact of slum upgrading on the living conditions in addressing the five key characteristics of a slum and improving the livelihoods of slum residents.

Lastly, majority of the available studies on slum upgrading in Kenya have tended to concentrate on the primary cities of Nairobi, Kisumu, and Mombasa, paying lesser attention to secondary cities. The secondary cities were also growing at a relatively faster rate and experiencing the same challenges as the major cities (Majale, 2009). In addition, there is disproportionately less policy attention to secondary cities contributing to their neglect, stagnation, and decline (Chege & Akall, 2006; Majale, 2009; Majale & Albu, 2001). Thus, there were limited empirical studies on the post-implementation stages and sustainability of slum upgrading in secondary cities in Kenya. Table 2.10.1 presents a summary of the gaps in knowledge in literature.

Table 2.10.1

Summary of Knowledge Gap in Literature

Objectives	Key sources	Key findings	Knowledge Gap
1) To assess the level of community participation in the post-implementation monitoring and evaluation, and maintenance of the IUHP and BiP: PUP projects as perceived by the project beneficiaries	Cities Alliance (2021a), Danso-Wiredu and Midheme, (2017), Kwena (2021), and Seokwoo et al. (2020)	Project beneficiaries possess valuable local knowledge, skills, and expertise which influences ownership, responsibility and acceptance	There are limited studies on participation of beneficiaries in the post-implementation. This is despite being critical the primary consumers of the interventions
2) To assess the level of sustainability of the IUHP and BiP: PUP projects implemented 15 years ago as perceived by the project beneficiaries	Field and Kremer (2008), Luvenga et al. (2015), and Ostrom (2010) Lyons et al. (2001) Marx et al. (2013), Soyinka, et al. (2016), and Takeuchi et al. (2008)	Addresses static sustainability and dynamic sustainability of development interventions Identifies the three dimensions namely project, personal, and community. Most studies are end-of-project evaluation. However, impact of slum upgrading take long time	There are limited empirical studies on the post implementation evaluations of sustainability, especially from the perspectives of the beneficiaries

Objectives	Key sources	Key findings	Knowledge Gap
3) To determine the influence of the community participation in the post-implementation monitoring and evaluation, and maintenance on sustainability of the IUHP and BiP: PUP projects through the perceptions of project beneficiaries	Barasa and Jelagat (2013), Khwaja (2004), Lall et al. (2008), Mansuri and Rao (2004), and Marx et al. (2013)	Emphasizes on post-implementation monitoring and evaluation, and maintenance as the pillars of sustainability	Deficient studies on influence of post-implementation monitoring and evaluation, and maintenance on sustainability of slum upgrading
4) To assess the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the living conditions in the selected slum settlements	UN-Habitat (2007a, 2009a, 2014a)	Addresses the five key characteristics of slum settlement Most of the studies focus on the immediate short-term impact	Limited focus on the perceptions of beneficiaries about the impact of slum upgrading on each characteristic
5) To assess the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the livelihoods in the selected slum settlements	UN-Habitat (2008a), and WHO (2005)	Focus on poverty and urban livelihoods in general. Impact of slum upgrading on the physical environment	Limited studies on impact of slum upgrading on livelihoods to augment the improved physical living conditions

2.11 Theoretical Framework

There are several theories that emphasize the need for beneficiary participation in all the stages of slum upgrading to achieve sustainability of the interventions. For example, the Participatory Planning Theory by Patsby Healey states that the planning of a development project is an interactive process that requires the active participation of all stakeholders through consensus building, dialogue, deliberations, and collaboration (Healey, 2012; Innes & Booher, 2010; Legacy et al., 2014). It emphasizes undistorted participatory communication to encourage interactive, inclusive, and equal discussion scenarios, where stakeholders learn, understand, and negotiate their competing interests (Healey, 2012; Legacy, 2010). Each stakeholder has a voice in the intended intervention, which should be valued and respected. As a result, decisions are the outcomes of consensus building for the benefit of all stakeholders. This increases inclusivity, sustainability, responsibility, and ownership of the project (Healey, 2012; Watson, 2003). In connection with the Participatory Planning Theory, there is the Capability Approach by Amartya Sen, in 1979, and modified by Martha Nussbaum, in 1988, 1992, and 2003. The Capability Approach holds that the aim of any development project is to enhance the capabilities of people to achieve the kind of lives that they have reasons to value (Nussbaum, 2011; Sen, 2001). Therefore, with the right conditions in place, slum dwellers have the ability to expand and express their capabilities as active and autonomous agents to influence decisions aimed at improving their living conditions and livelihoods. As a result, slum dwellers should actively participate in in slum upgrading (Nussbaum, 2011; Sen, 2001, 2009).

However, although the Participatory Planning Theory and Capability Approach explain the need for active participation in slum upgrading, this study was anchored more on the Theory of Change and Sustainable Livelihood Framework/Approach (SLF/SLA) as summarized below.

2.11.1 The Theory of Change

The Theory of Change by Kurt Lewin states that in any community, there are certain restraining forces influencing individuals and/or organizations and countering the driving forces to keep the status quo or cause a change to happen (Manchester et al., 2014). Changing the status quo requires executing planned change activities by increasing the striving forces for change, or

decreasing the driving forces (Lewin, 1947). Accordingly, Lewin (1951) argued that a change agent such as an NGO can introduce a new idea or process, but the resultant change depends on whether the targeted beneficiaries embrace and put it into practice.

The theory has a three-step process of unfreezing, changing, and refreezing (freezing) (Manchester et al., 2014). The unfreezing involves the readiness to change by creating awareness of the identified problem so that the targeted beneficiaries can let go of old ways and undo the current equilibrium. The assessment of the current practices and processes set the wheels of change in motion. The changing step involves seeking alternatives by demonstrating the benefits of the change, and decreasing forces that affect the change negatively. Once the targeted beneficiaries open up their minds, then the desired change can start. The process requires time and resources. The refreezing (freezing) entails making the change stick by integrating and stabilizing a new equilibrium into the system so that it becomes a habit and resists further change (Lewin, 1951; Manchester et al., 2014). The full effect of the adopted change becomes permanent and the standard. Therefore, the theory is about unfreezing the current behaviours and processes, making the desired changes, then practicing and freezing the new behaviours and practices into everyday actions (Lewin, 1951). The three steps give a change agent a framework to implement a change effort (Figure 2.11.1).



Figure 2.11.1: Lewin's Three-Step Model for Planned Change

In terms of a development project, the theory explains how activities of a given intervention(s) can contribute to a chain of specific desired results leading to the observed impacts. The objectives and activities of the interventions are identified and planned, and changes and adapts in response to emerging issues and decisions by stakeholders (Jackson, 2013). The theory helps to identify solutions by addressing the causes of problems that hinder progress and guide decisions on the approach to take, considering the comparative advantages, effectiveness, feasibility, and uncertainties of the change process. It emphasizes the role of the targeted

beneficiaries in the process. The assessment of the expected or desired change in the post-implementation stages determine sustainability.

The theory was relevant to this study in illustrating the role of the change agent (NGOs in this case) in facilitating slum upgrading whose impact (change) is verified through the active participation in post-implementation stages and its sustainability. The ITDG-EA through the IUHP and BiP: PUP projects were the change agent, while the expected desired change was an improvement in the living conditions of the project sites and the livelihoods of the targeted beneficiaries. However, the success of the desired change depends on the extent to which the targeted beneficiaries participated in the post-implementation stages of monitoring and evaluation, and maintenance, as pillars of the sustainability of the projects.

2.11.2 Sustainable Livelihood Framework/Approach

A Sustainable Livelihood Framework/Approach (SLF/SLA) is a holistic approach for assessing how poor households develop and maintain a variety of beneficial livelihood outcomes based on their asset portfolio within the existing vulnerability context – the prevailing socio-economic and physical context (DFID, 2002). It assesses the assets of the poor households and their influence on the adopted livelihood strategies to achieve beneficial livelihood outcomes (Adaawen & Horgensen, 2012; Grimm, 2012). It has five major components with sequential relationships and feedbacks including the vulnerability context, livelihood assets, transforming structures and processes, livelihood strategies, and livelihood outcomes (DFID, 2002). Figure 2.11.2 summarizes the interlinkages among these main components.

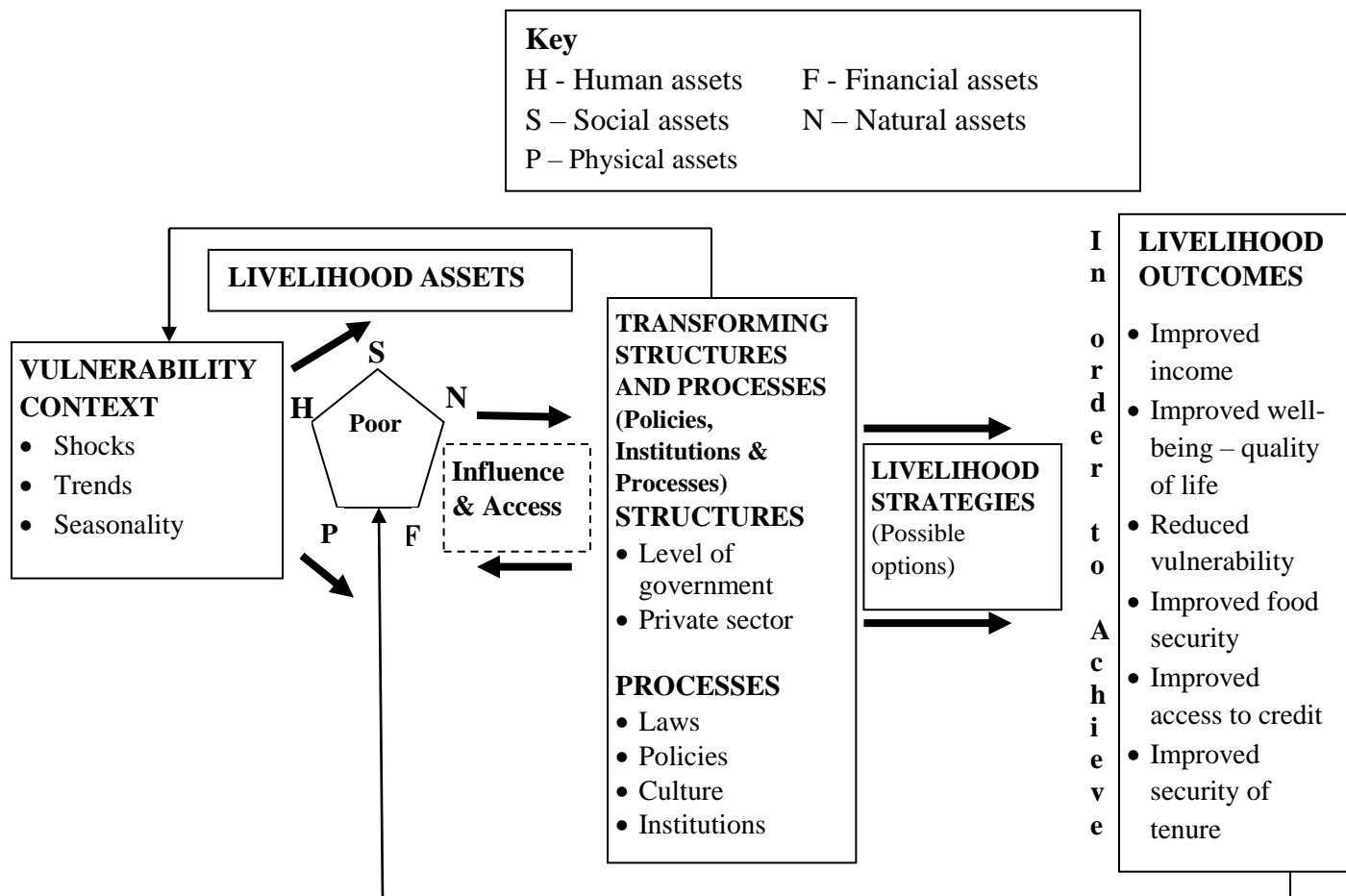


Figure 2.11.2: Sustainable Livelihoods Framework/Approach

Adapted from DFID (1999)

The vulnerability³ context describes the external environment that the poor live in, and which influences their asset portfolio, livelihood strategies, and associated livelihood outcomes (Adaawen & Horgensen, 2012). The context includes the trends, shocks, and seasonality factors that the poor have to cope with as they pursue beneficial livelihood outcomes (Brown, 2012; DFID, 2002). This determines the asset portfolio of a household. Assets refer to stocks of capital directly or indirectly used to generate a means of survival. They can be stored, accumulated, or

³ Vulnerability refers to the inability to cope with shocks, stress and risk of the changing environment without suffering damaging loss – i.e. limited capacity to cope.

traded to generate a flow of benefits. There are five common types of assets namely natural, social, human, physical, and financial assets (DFID, 2001). The ability of a household to reduce vulnerability depends on its asset portfolio and capacity to manage access and transform the assets. Households combine different assets to construct livelihood strategies and pursue beneficial livelihood outcomes to meet their livelihood objectives (de Haan & Zoomer, 2003; Kaag et al., 2004) and act as a buffer against shocks, stresses, and seasonality (Rakodi, 2002). Ellis (2000) and Meikle (2002) opines that households with more and varied assets are likely to strengthen and diversify their livelihood strategies to achieve beneficial outcomes.

The impact of the vulnerability context and asset portfolio is shaped by the transforming structures and processes (policies, institutions, and processes - PIPs), which significantly influence the adopted livelihood strategies and the resultant livelihood outcomes (Bingen, 2000; DFID, 2002). The PIPs include governance, laws, policies, standards, regulations, public service delivery, institutions and organizations (public and private), which determine access to and transferability of assets, and the returns to livelihood strategies (DFID, 2002). They identify opportunities and restrictions for the development of livelihood strategies and the resultant beneficial livelihood outcomes such as improved incomes, food security, well-being, access to credit, and so forth. (Ellis, 2000). For example, Schilderman (2004) observed that the regularization of security of tenure influences the provision of basic municipal services and access to credit.

This study considered SLF/SLA relevant since it provides a useful conceptual base for understanding the vulnerability context of slum settlement and the impact of slum upgrading in improving the living conditions and livelihoods of the slum dwellers. Slum upgrading seeks to increase the asset portfolios of slum dwellers to strengthen their livelihood strategies and contribute to beneficial livelihood outcomes. The aim is to strengthen the integration of the slum settlement into the entire urban area. The SLF/SLA puts slum dwellers at the centre of slum upgrading and analyses their livelihoods through active participation and involvement in the entire life cycle of the project.

In summary, the SLF/SLA provided an understanding of the vulnerability context and asset portfolio of slum households, which determines the magnitude of the challenges in the settlement. Slum upgrading addresses this by utilizing the potentials and capabilities of slum dwellers to improve their living conditions and livelihoods. The Theory of Change explained how activities of slum upgrading contribute to a chain of specific results (change) leading to the observed impacts. The study therefore used SLF/SLA and the Theory of Change as a conceptual and analytical framework to assess beneficiaries' perception of the post-implementation stages and sustainability of slum upgrading in secondary cities of Nakuru and Kitale, Kenya.

2.12 Conceptual Framework

From the above theoretical framework, this study presents a conceptual framework illustrating the relationship between post-implementation stages and sustainability of slum upgrading. The study premised the framework on the fact that post-implementation stages of slum upgrading focus on maintenance and preservation of the activities and benefits, which are pillars of sustainability and the impact on the living conditions and livelihood outcomes. Figure 2.12.1 summarizes the relationship between the independent and dependent variables in the study.

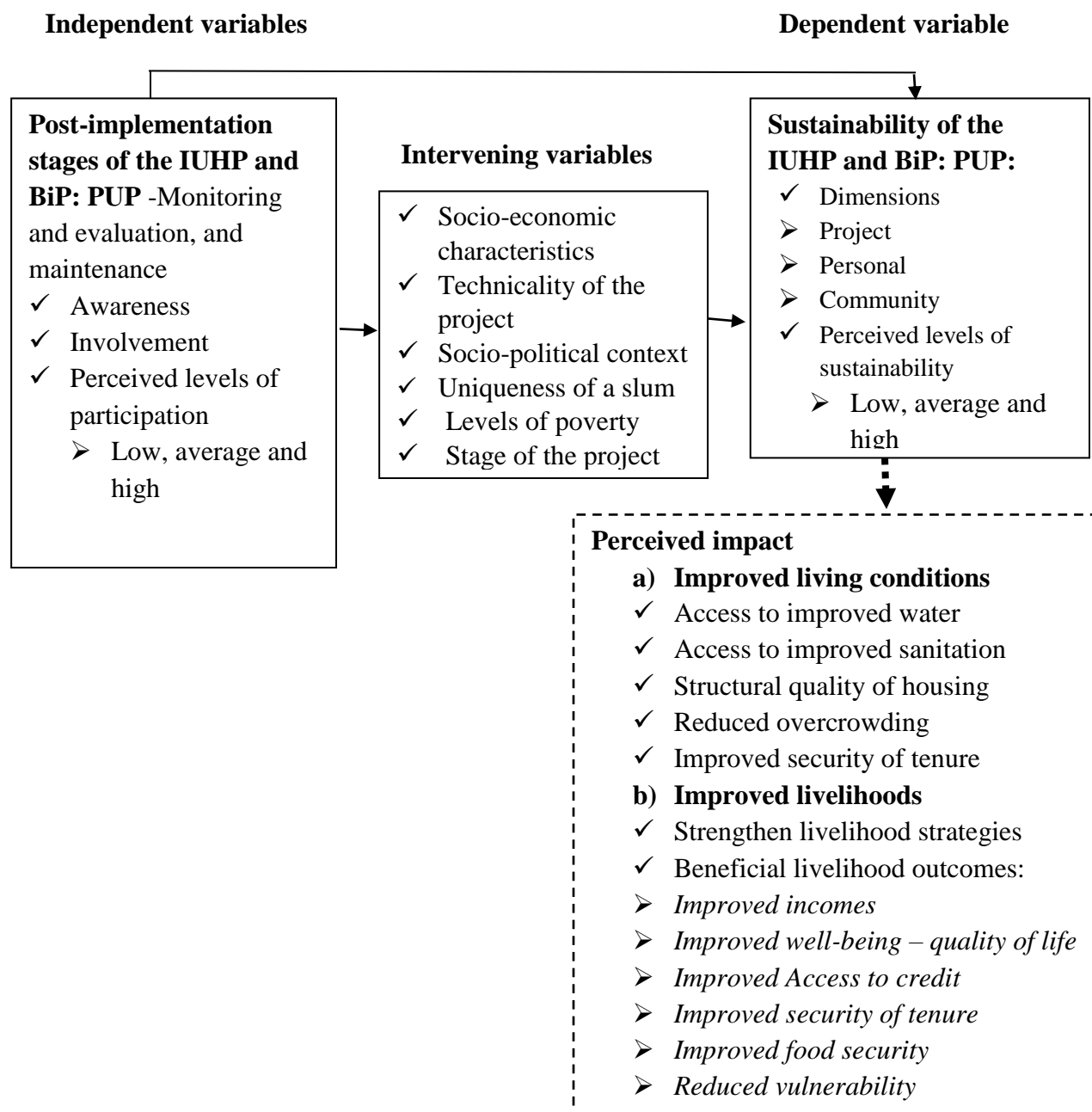


Figure 2.12.1: Post-Implementation and Sustainability of Slum Upgrading

Modified from the SLF (DFID, 2002)

This study conceptualized that the vulnerability context and asset portfolio of a slum household determines the magnitude of the challenges facing the settlement. Therefore, the deteriorating

living conditions and livelihoods in a slum settlement necessitate a need for intervention through slum upgrading. The sustainability of the slum upgrading projects – IUHP and BiP: PUP project (dependent variable) was contingent upon beneficiary participation in the post-implementation stages of monitoring, evaluation, and maintenance (independent variable). The awareness, involvement and perceived level of participation of the targeted project beneficiaries in the post-implementation monitoring and evaluation, and maintenance positively influenced the perceived level of sustainability of the two projects under review. This in turn positively influenced the perceived impact of the two projects on the living conditions of the settlements and the livelihoods of the targeted beneficiaries. Improved living conditions entails addressing and reversing the five key characteristics of a slum settlement including access to improved water, access to improved sanitation, structural quality of housing and security of tenure, and reduced overcrowding. Improved livelihoods involves strengthening livelihood strategies and increasing beneficial livelihood outcomes such as improved income, improved well-being (quality of life – health and socio-economic), improved access to credit, improved security of tenure, improved food security, reduced vulnerability, among others.

However, the influence of the perceived beneficiary participation in the post-implementation monitoring and evaluation, and maintenance stages on sustainability of slum upgrading depended on several intervening variables. These intervening variables included socio-economic characteristics (level of education, age, gender, family size, etc.), stage of the project, level of technicality of the project, socio-political context, uniqueness of the slum area, level of poverty, and so forth. The study expected the intervening variables to facilitate or reverse the expected relationship between the independent variable and dependent variable. For example, adequate level of education, low levels of poverty, supportive socio-political context, appropriate technology, flexible decisions, among others would contribute to a positive relationship between community participation and sustainability of slum upgrading. This in turn would lead to a perceived positive impact on the living conditions and livelihood outcomes, and vice versa. The study controlled the influence of the intervening variables by incorporating them into the study and studied alongside the independent and dependent variables.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides a discussion of the research methodology used in this study. The study anchored the research methodology on a mixed-method research philosophy that integrated positivist (scientific) and interpretivist (constructivist) research paradigms. The positivist philosophy sought to generalize the results from the sample to the larger population using standardized scientific and quantitative methods that involved descriptive and inferential statistics from the semi-structured questionnaire. This was achieved using null hypotheses that operationalized the five specific objectives. The interpretivist philosophy sought to understand individual respondent's perspective about the topic under study using qualitative methods. This targeted qualitative data derived from key informants including the Project Manager, officials of CBOs, FGDs and field observations. The mixed-method research philosophy using qualitative and quantitative methods provided an in-depth understanding of the research problem and increased the validity of the findings. Based on this mixed-method research philosophy, the chapter presented a description of the study area, research design, target population, sample size and sampling procedures, data collection instruments, data analysis, and ethical considerations.

3.2 Description of the Study Area

This section described the two secondary cities that hosted the two slum upgrading projects under review namely the Integrated Urban Housing Projects (IUHP) in Nakuru and the Building in Partnership: Participatory Urban Planning (BiP: PUP) project in Kitale. It also provided a justification for the selection of the two cities and two projects.

3.2.1 Nakuru City

This sub-section describe Nakuru city and the slum upgrading project that was implemented in selected slum settlements.

Location and Physical Features of Nakuru City

Nakuru city is the fourth largest and fastest-growing city in Kenya, after Nairobi, Mombasa, and Kisumu in that order. It is the administration and economic capital of the County Government of Nakuru and the former headquarters of the vast but now defunct Rift Valley Province. Records indicate that Nakuru, an urban area, was established in the 1900s as a railway station on the Great East Africa Railway, became a township in 1904, and was granted municipality status in 1952 (KNBS, 2019b; Nakuru CIPD, 2018). It was later elevated from a secondary city and awarded a city charter as the fourth primary city in Kenya on 1st of December, 2021 (see Footnote 1). The name 'Nakuru' come from a Maasai word Nakurro meaning a 'dusty place'.

Nakuru city is located between longitudes 35° 0' East and 37° 0' East and latitudes 0° 0' South and 1° 0' and at the heart of the Great East African Rift Valley region. It lies at an altitude of 1895m above sea level, with Lake Nakuru as the lowest point at 1750m and Menengai Crater as the highest point at 2100m. The city is located in an environmentally sensitive area sandwiched between Lake Nakuru National Park to the South, Mau escarpment to the East, fault lines to the West, and the Menengai Crater to the North. Further to the North-East is the Bahati Escarpment forming the Western fringe of the Aberdares Escarpment (see Figure 3.2.1). These geophysical characteristics and the proximity of the town to the lake has resulted in a beautiful but fragile natural environment, which limit the physical growth and expansion (Mwangi, 2001, 2002; Owuor, 2006).

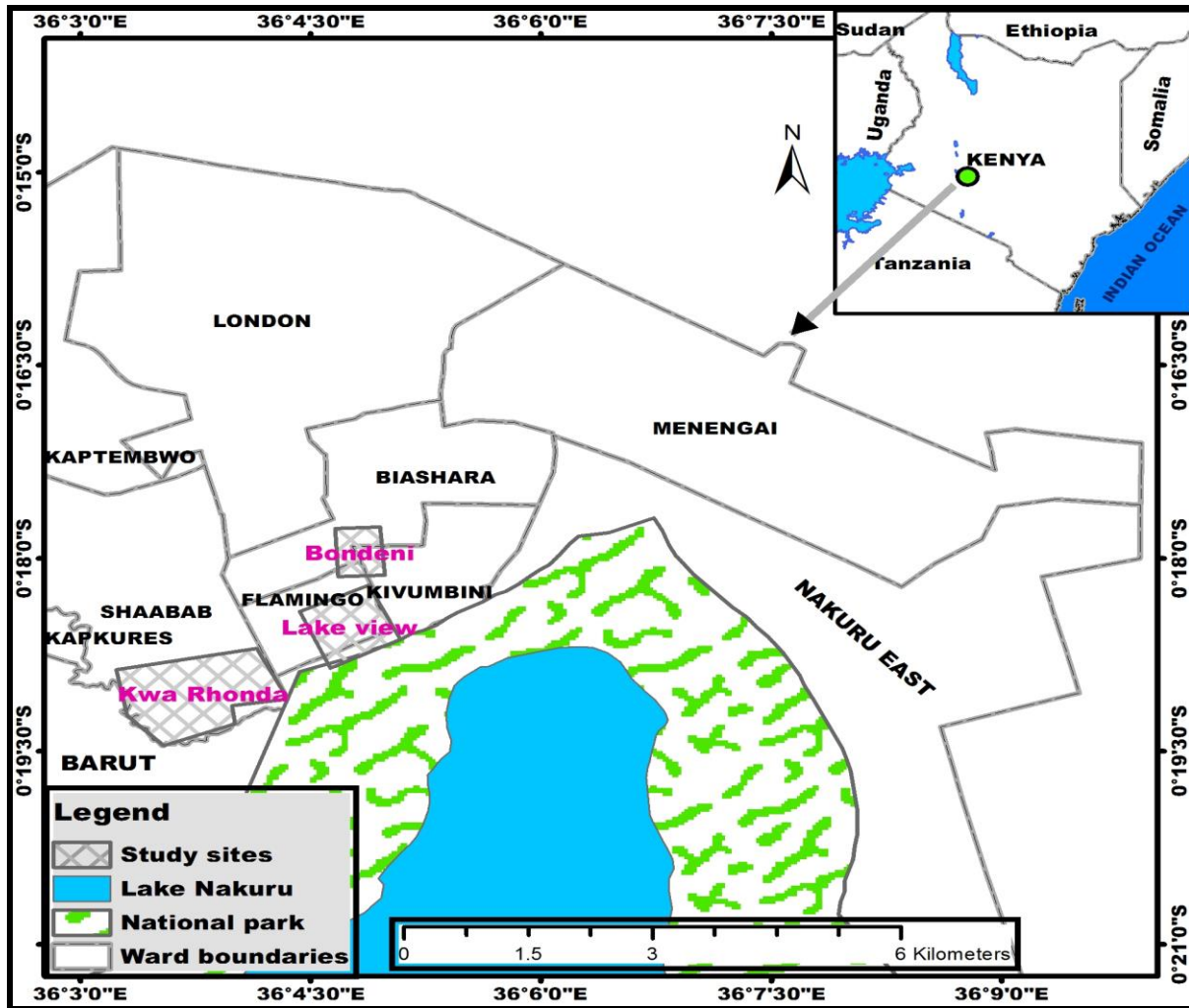


Figure 3.2.1: Study Sites in the Secondary City of Nakuru

Climatic Conditions of Nakuru City

Nakuru city has a dry sub-humid equatorial climate significantly influenced by altitude and physical features. The city receives a bimodal rainfall pattern with the long rains coming from March to May, while the short rains takes place from July to September. The average annual rainfall is about 1000 mm. Hot and dry weather is prevalent between December and February with temperatures varying between 25°C and 30°C and characterized by whirlwinds and dust clouds particularly in residential areas along the lake (GoK, 2000a).

Economic Characteristics of Nakuru City

Nakuru city serves as a centre for agro-based manufacturing and processing resulting from its rich agricultural hinterland. This explains the prominence of small-scale agricultural activities within its metropolitan area (Nakuru CIPD, 2018; Owuor & Foeken, 2006). The city has a vibrant economy based on broad sectors such as commerce, manufacturing, tourism, agriculture and forestry, and informal trade. The major industries include textile, food processing, pyrethrum, chemical, tanning, seed coating, and paint. Several tourist attractions including Lake Nakuru, Menengai Crater, and archaeological sites such as Sirikwa holes and Hyrax Hill surrounds the city (Nakuru CIPD, 2018).

Population Profile and Settlement Structure of Nakuru City

The population of Nakuru city has increased over time from 47,000 persons in 1969 to 163,927 in 1989 and further to 239,000 in 1999, 309,424 in 2009, and 570,674 in 2019. This represents a growth rate of 5.6% per annum (KNBS, 2019b). The increase in population is attributed to natural population increase, rural-urban migration, boundary extension (Mwangi, 2002), cosmopolitan character, favourable climate, and intensive sub-division of the surrounding former large cooperative farms (Majale & Albu, 2001; Nakuru CIPD, 2018). The rapid population growth, increasing poverty, and declining economic opportunities has resulted in a large proportion of its population living in slum and informal settlements (Mwangi, 2002). In addition, most of the settlements take place in the peri-urban areas expropriated from agricultural uses through the land subdivision. This poses a challenge to planning as majority of its population lived in unplanned settlements, not served with municipal services (Nakuru CIPD, 2018).

Nakuru city has also frequently served as a refugee centre for displaced persons from recurrent violent political and ethnic conflicts in the Rift Valley region during the general political election periods in the country since the early 1990s. The situation became worsen during the 2007 post-election violence, where majority of the people displaced in the region settled in its sprawling slums, which complicates further the already poor living conditions (Olwero, 2008). Poverty levels stand at 56.0% with about 70.0% of the population lived in the densely populated slum and informal settlements of Kwa Rhonda, Kaptembwo, Mwariki, Lakeview, Bondeni,

Kivumbini, and Free Area (Nakuru CIPD, 2018; World Bank, 2014). This contributed to the implementation of the Integrated Urban Housing Project (IUHP) to improve living and livelihoods conditions in selected slum settlements.

3.2.2 Integrated Urban Housing Project

As a result of the increasing poverty levels in Nakuru, 87.0% of the residents were tenants due to lack of security of tenure, high cost of house construction and low income (Olwero, 2008; Owuor, 2006). Thus, there was need to lower the cost of house construction and promote IGAs through appropriate technologies (Majale, 2003). It was in realization of this that ITDG-EA in partnership with the Municipal Council of Nakuru and other stakeholders implemented IUHP in selected slum settlements between April 1999 and September 2003. The aim was to increase access to adequate, safe and secure shelter (physical capital) through use of ABTs, building human capita through skills upgrading, strengthening community-based groups and empowering local communities (social capital), and facilitating access to credit through sustainable IGAs and regular savings (financial capital). The Department for International Development (DFID) of the Government of the United Kingdom supported the project, coordinated by the ITDG-UK (ITDG-EA, 2003; Majale, 2003). The ITDG-EA had a long history in facilitating housing in slum settlements in several countries such as Kenya (Nakuru, Kitale, and Kisumu), India (Alwar), Zimbabwe (Chitungwize), Sudan (Shambob), and so forth (ITDG-EA, 2003).

The ITDG–EA had worked in the secondary city of Nakuru before IUHP, most notably through the Enabling Housing Standards Project, which reviewed housing standards to enable access to housing using appropriate designs, materials and technologies. This provided a platform for IUHP (Majale & Albu, 2001). The IUHP adopted a participatory approach to foster partnerships among key stakeholders (Majale, 2003). It worked with the residents through CBOs and supported the establishment of the Nakuru Affordable Housing and Environment Committee (NAHECO) as an umbrella organization of CBOs. The IUHP adopted an integrated approach with a range of complementary interventions in shelter and infrastructure including establishment of housing cooperatives, skills training; and establishment of IGAs and savings groups and a revolving fund. The main assumption was that the increased incomes would

motivate residents to invest in improving their housing (ITDG-EA, 2003). The project considered a house as a place to work from, access markets and opportunities, ensure permanence of assets and socialize. In addition, it was collateral to raise credit, source of income from rental or home-based enterprises, a status symbol and a contributor to good health and productivity (ITDG-EA, 2003; UN-Habitat, 2011a).

The IUHP adopted the SLF to formulate a participatory needs assessment in all low-income areas that prioritized issues for intervention through capacity building based on the existing potentials and assets. The assessment identified housing, water, and sanitation as the most urgent and pressing needs, and Kwa Rhonda, Lake View, and Bondeni as the most deprived neighbourhoods (ITDG-EA, 2003; Majale, 2003).

Kwa Rhonda neighbourhood is located on land formerly owned by a white settler known as Rhonda, and the settlement started in the 1970s after the settler left. Over time, there has been increased pressure on the land and available resources. Most of the basic services and infrastructure are insufficient and not formally planned. The majority of the residents are landless tenants without formal employment with mixed cultural origins (ITDG-EA, 2003).

Lakeview is a settlement estate for the British before independence that and later sold to Kenyans. The population has been increasing over time resulting from natural increase and migration of people in search of employment opportunities. This has contributed to increased pressure on the available basic services. The settlement often faces the challenges of human-wildlife conflict from the neighbouring the Lake Nakuru Park (ITDG-EA, 2003).

Bondeni is a settlement that began around 1914 by Swahili speaking people settled mainly employed by the white settlers as porters. However, currently the area is cosmopolitan as the population increases and migration. The increase in population has contributed to increased pressure on the basic services and infrastructure. Most of the houses are mud-walled and tin roofed and infrastructure, such as roadside drainage, toilets, sewerage systems, streetlights, and refuse collection facilities are in a very poor state (ITDG-EA, 2003).

The IUHP selected the three neighbourhoods as project sites based on the high levels of poverty, inadequate basic services, and presence of diverse IGAs and shelter development initiatives. In addition, the neighbourhoods had previous partnerships with other organizations, were involved in environment, water, and sanitation initiatives, and had a high number of development initiatives targeting women and youth. The residents suffered from high poverty levels and inadequate basic services and majority lived in unplanned and poor quality housing. The end-of-project evaluation indicated that the project directly benefited at least 1647 residents through formation saving schemes and IGAs, capacity building, access to low-cost housing, access to water and sanitation, and improved security of tenure (ITDG-EA, 2003; Majale, 2003).

3.2.3 Secondary City of Kitale

This sub-section describe the secondary city of Kitale and the slum upgrading project that was implemented in selected slum settlements.

Location and Physical Features of the Secondary City of Kitale

The secondary city of Kitale is a rapidly growing secondary and agricultural city in the Northern Rift Valley region of Kenya situated between Mount Elgon and Cherangani Hills at an elevation of about 1900m (6200 feet) above sea level. Kitale is generally flat with gentle undulations rising steadily towards Mount Elgon in the Northwest (see Figure 3.2.2). The secondary city is the administrative and commercial capital of Trans-Nzoia County and serves as a frontier urban area for the drought-prone Northern Kenya region. It is located about 380 km to the north west of Nairobi, the capital and primate city of Kenya (Majale, 2009).

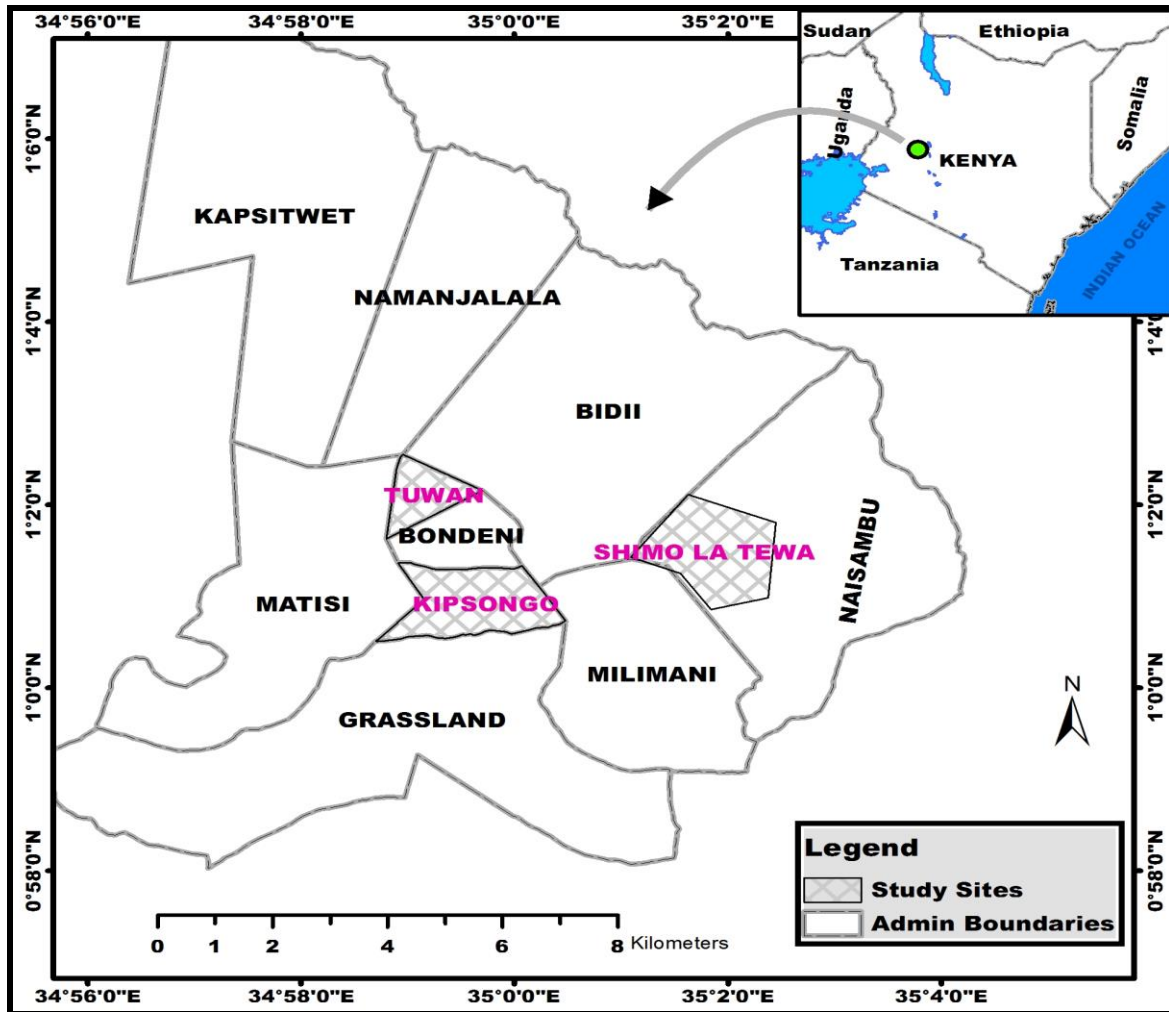


Figure 3.2.2: Study Sites in the Secondary City of Kitale

Climatic Conditions of the Secondary City of Kitale

The secondary city of Kitale has a highland equatorial climate receiving adequate rainfall fairly distributed throughout the year and ranging between 900 mm and 1400 mm. Kitale experiences a bimodal rainfall pattern with the long rains coming from April to June, while the short rains occurs from July to October. The average annual temperatures ranges between 10°C and 27°C with a mean of 18.6⁰ C. These conditions are favourable for livestock and crop production making the immediate hinterland a high agricultural potential (GoK, 2013; Majale, 2009).

Economic Characteristics of the Secondary City of Kitale

The secondary city of Kitale is a centre for agro-based manufacturing and processing resulting from its rich agricultural hinterland. It also has tourism attractions such as Kitale Museum famous for cultural artifacts, nature trails, and various reptile species, and Saiwa Swamp National Park nearby (Majale, 2009).

Population Profile and Settlement Structure of the Secondary City of Kitale

According to the 2019 Housing and Population Census, the secondary city of Kitale had 162,174 people with an annual growth of 12.0% (KNBS, 2019b) and a population density of 520 persons per Km² (GoK, 2013). The rapid population growth is attributed to migration due to decreased economic opportunities in the surrounding areas, recurrent drought in Northern Kenya, in-migration from other neighbouring urban centres, and natural population increase. The high population has far outstripped the capacity of the Kitale Municipal Council (KMC) to effectively plan the urban area and deliver infrastructure and other basic services (Majale, 2009; Chege & Akall, 2006). As a result, 65.0% of its population lack access to basic services and lived in sprawling slum and informal settlements such as Kipsongo, Shimo-La-Tewa, and Tuwan (Majale, 2009; ITDG, 2006) as shown in Figure 3.2. This contributed to the implementation of the Building in Partnership: Participatory Urban Planning (BiP: PUP) project to improve living and livelihoods conditions in selected slum settlements

3.2.4 Building in Partnership: Participatory Urban Planning Project

The high population in the secondary city of Kitale far outstripped the capacity of KMC to effectively plan development and deliver infrastructure and other services. As a result, 65.0% of its population lived in the densely populated slum and informal settlements (Chege & Akall, 2006; Majale, 2009). The KMC responded by initiating and implementing various slum upgrading interventions in the low-income neighbourhoods. However, majority of the interventions failed due to a lack of involvement of the local community in decision-making processes (Majale & Chege, 2006). It is in realization of this failure that ITDG-EA in partnership with KMC and other stakeholders implemented the BiP: PUP project between April 2001, and March 2004. The project sought to develop, test and disseminate approaches and methodologies

in the planning of urban space by encouraging active participation and partnership of key stakeholders in assessing community needs and developing sustainable interventions using neighbourhood plans. The aim was to integrate local knowledge in implementing urban planning (Majale, 2008, 2009).

The BiP: PUP project adopted the SLF, and used participatory urban appraisal methodologies to conduct needs assessment and design appropriate sustainable interventions using specific neighbourhood plans (Majale, 2009, 2008). In addition, the project conducted a detailed household survey and inventory of active CBOs (Okelo et al., 2008). This provided information on the development activities, availability of resources to address the local needs, challenges and opportunities through participatory urban planning (Chege & Majale, 2005). From the surveys, there was a consensus on the priority development needs, and the specific neighbourhoods targeted for upgrading. As a result, ITDG-EA identified Kipsongo, Shimo-La-Tewa, and Tuwan as the most deprived neighbourhoods and used as project sites (Majale, 2009, 2008).

Kipsongo is largely a squatter settlement on a six-hectare piece of land that was initially a dumping site of KMC dominated by the traditionally pastoralist Turkana tribe who migrated from Northern Kenya in early 1970s. The main causes of migration were perennial drought, famine and constant conflicts over contested grazing lands and cattle rustling (ITDG, 2006). Kipsongo is amongst the poorest and most vulnerable neighborhoods in Kitale with no security of tenure for the land, which is owned by the KMC. The area is overcrowded with inadequate access to basic services and infrastructure. From the surveys conducted, the Strategic Action Plans (SAPs) prioritized water and sanitation interventions. Protected springs and ventilated improved pit latrines provided at a lower cost. The neighbourhood is now included in municipal planning processes (ITDG, 2006; Majale, 2008, 2009).

Shimo la Tewa is a small settlement located on a valley adjacent to a high-income residential area of Milimani separated by a small, heavily polluted steep river gorge. Initially, domestic casual labourers dominated the area. However, the population has grown with time leading to pressure over basic services and infrastructure (ITDG 2006). The area is characterized by poor-

quality housing, inadequate access to clean water supply and sanitation, and poor pedestrian accessibility and linkages. The SAP prioritized construction of a 130 metre span footbridge across a ravine that separated the settlement causing pedestrian safety, accessibility and connectivity problems, especially during heavy rains. A partnership of various stakeholders constructed the footbridge (ITDG, 2006; Majale, 2008, 2009).

Tuwan is the most populous slum settlement in Kitale, having developed on an extensively subdivided former colonial large-scale farm (310 acres) bought by a land-buying company (ITDG 2006). The subdivision of land into small plots had necessitated the need for infrastructure services. Therefore, the identified priority needs included improved access to water supply and sanitation. The residents chose to address these needs through the construction of a communal ablution block, comprising water-borne latrines, and showers with provision for hot water, laundry facilities and a multi-purpose room (ITDG, 2006; Majale, 2008, 2009).

The BiP: PUP project used the three project sites to test, develop and disseminate partnership approaches that encouraged stakeholder participation in assessing real user needs and designing appropriate intervention strategies (Majale & Chege, 2006). The end-of-project evaluation indicates that the project directly benefited at least 5614 residents with formation of saving schemes and IGAs, training opportunities, improved physical access, access to water and sanitation, low-cost housing, and improved tenure security (Chege & Akall, 2006; ITDG, 2006; Majale, 2008, 2009;). For sustainability, there was the active involvement of the stakeholders in planning, prioritization, implementation, operation, and maintenance as well as cost sharing and training (Majale, 2008).

3.2.5 Justification and Selection of the Study Areas

As indicated earlier, the study selected the secondary cities of Nakuru (see Footnote 1) and Kitale because of the available statistical evidence of high proportion of the population living in slum and informal settlements. However, there was disproportionately more research and policy attention on the primary cities of Nairobi, Kisumu, and Mombasa compared to secondary cities such as Nakuru and Kitale. This had contributed to the neglect, stagnation, and decline of the

secondary cities. In addition, the secondary cities of Nakuru and Kitale had hosted two slum upgrading projects to improve the living conditions and livelihoods in selected low-income neighbourhoods. The two projects had undergone full life cycle and thus suitable for the assessment of their post-implementation stages and sustainability. This influenced the choice of the secondary cities of Nakuru and Kitale as secondary cities and the two slum upgrading projects namely the IUHP and BiP: PUP projects for this study.

3.3 Research Design

This study adopted a multiple case study research design. A case study research is an intensive, detailed, and systematic study of a particular case(s) in a specific natural real-life context as a basis for drawing conclusions and generalizations to other similar cases (Miles et al., 2014; Yin, 2018;). This study considered slum upgrading as a common and preferred strategy of improving the living conditions and livelihoods of slum settlements globally. As a result, the study used two case studies from two secondary cities in Kenya namely the IUHP in Nakuru and BiP: PUP project in Kitale, for a detailed and in-depth assessment of the post-implementation stages and sustainability of slum upgrading. The use of the two case studies analyzed as a unit, allowed for comparisons of the findings in terms of similarities and differences where possible. The design was preferred since this study focused on the perceptions of the target project beneficiaries about their participation in the post-implementation and sustainability of the two projects implemented 15 years ago. This allowed the use of a mixed-method research approach that enabled triangulation of the sources of data and methods of analysis from a range of qualitative techniques (interviews, focus groups, and observations) and quantitative techniques (semi-structured questionnaire).

3.4 Target Population

The study targeted the 7261 beneficiaries of the two projects including 1647 from the IUHP and 5614 from BiP: PUP project. From the records of the two projects, a majority of the targeted beneficiaries received multiple benefits from the different activities. As a result, direct counting of the number of beneficiaries per each activity could have resulted into an overlap and double counting. For example, some of the beneficiaries of the low-cost housing also benefited from the

savings schemes, IGA groups, improved security of tenure, and access to water and sanitation. To correct the overlap and double count, the study focused on a discrete beneficiary from the entire project and not the number of beneficiaries per activity of a project.

The study attributed variations in the number of beneficiaries between the two projects to the different delivery models (approaches) used by ITDG-EA in implementing activities. The IUHP adopted a more individual approach in implementing majority of its activities by targeting individual slum residents. The assumption was that the accrued individual benefits would spill over to the entire community with time. Some of the activities that targeted individuals included low-cost housing, training, on-plot water connections, and so forth. However, the Project Manager from ITDG-EA observed that limited resources lowered the number of individual beneficiaries. In contrast, the BiP: PUP project adopted a more communal approach by targeting the entire community in implementing majority of its activities. The assumption was that the benefits from communal activities would spill over to individual residents over time. Some of the common communal activities included rehabilitation and protection of natural sources of water, communal sanitation facilities, and community social halls. The Project Manager observed that the different delivery models (approaches) contributed to variations in the number of respondents with the BiP: PUP project taking a higher proportion compared to IUHP.

In addition to the project beneficiaries, the study also targeted the Project Manager from ITDG-EA, 193 officials of the 32 active local CBOs at the time of the study, and the County Urban Development Officer of each secondary city. The study established that the two projects had the same Project Manager from the ITDG-EA. Table 3.4.1 summarizes the distribution of the target population

Table 3.4.1

Distribution of the Target Population

Category of respondents	Frequency
Project beneficiaries	7261
Project manager	1
Officials of local CBOs	193
County Urban Development Officer	2
Total	7455

3.5 Sample Size and Sampling Procedure

The main unit of observation in this study was the project beneficiaries. Therefore, ideally, it would have been preferable to use all the 7261 beneficiaries of the two projects for total confidence and validity of the results. However, due to various constraints such as relocation within and outside the project sites and natural attrition, a representative sample was drawn and studied instead. This study adopted a formula by Kothari (2004) to determine the sample size (n) from a finite population size (N). The formula maximizes on the level of precision (reducing the sampling error), the level of confidence or risk of error (based on the Central Limit Theorem at 95% confidence level), and the degree of variability (distribution) in the attributes being measure (distribution of attributes in the population) given by:

$$n = \frac{z^2 p \times q \times N}{e^2 (N - 1) + z^2 pq}$$

Where:

n – Required sample size

N – Target population (7261)

p – Population proportion, $p = 0.5$, $q = 1 - p = 0.5$

z – Standard z-value at a given significance level, i.e. $z = 1.96$ for 0.05 significance level

e – Acceptable error (degree of accuracy) whose value is 0.05

$$n = \frac{(1.96)^2 \times 0.5 \times 0.5 \times 7261}{(0.05)^2 \times (7261 - 1) + (1.96)^2 (0.5)(0.5)}$$

$$n = \frac{6973.4644}{18.15 + 0.9604}$$

$$n = \frac{6973.4644}{19.1104} = 364.9041569 \approx 365$$

The study adopted a multistage sampling procedure combining probability and non-probability sampling techniques to select the sample. In the first stage, the study used proportionate stratified sampling to distribute the sample between the two projects based on their respective number of beneficiaries by dividing the number of beneficiaries from each project by the target population size (7261) and multiplying the product by the sample size (365). Thus, the IUHP had $\frac{1647}{7261} \times 365 = 82.7923 \approx 83$, while BiP: PUP project had $\frac{5614}{7261} \times 365 = 282.2077 \approx 282$. This translated to 22.7% (83) from the IUHP and 78.3% (282) from BiP: PUP project of the sample size of 365.

In the second stage of sampling, the study equally distributed the sample allocated to each project among its project sites. Thus, we had 28 beneficiaries from each project site of the IUHP and 94 from each project site of BiP: PUP project. Lastly, since the study was conducted the study 15 years after completion and implementation of the two projects, some of the targeted beneficiaries had relocated within and outside the project sites, while others were absent through natural attrition. This limited the use of probability sampling to identify and trace the respondents. As a result, the study used the snowball sampling to select the proportion of the sample assigned to each project site by relying on the social referrals and networks from the leaders of the local CBOs to identify and trace the respondents.

The study also included the Project Manager from ITDG-EA that facilitated the implementation of the two projects, the County Urban Development Officer from each secondary city, and 12 officials of local CBOs from each project. In total, the study targeted a sample of 392 respondents namely 365 project beneficiaries, 2 County Urban Development Officers, 1 Project manager from ITDG-EA and 24 officials of local CBOs as summarized in Table 3.5.1.

Table 3.5.1

Distribution of the Sample

Category of respondents	Proportion of sample
Beneficiaries	365
Project Manager	1
County Urban Development Officers	2
Officials of CBOs	24
Total	392

3.6 Data Collection Instruments

The study collected primary and secondary data on the target variables to achieve the objectives of this study. The study collected secondary data from existing relevant documented sources about the topic under review including official documents of the two projects, and any other relevant existing literature from journals, books, articles, internet, bulletins, and so forth.

The study collected primary data using a semi-structured questionnaire, key in-depth interviews (KII), Focus Group Discussion (FGD), and field observation. A semi-structured questionnaire (Appendix C) with pre-coded closed and open-ended items was administered to the sampled 365 beneficiaries. The questionnaire targeted information on post-implementation stages, sustainability, impact, living conditions, and livelihoods. The study selected and trained four research assistants to administer the questionnaire. The four were former students in the Department of Geography of Egerton University and selected based on prior classroom knowledge in urban settlement, slum upgrading, participatory approaches in development, and research methods. Although the study developed the questionnaire in the English language, there was also a Kiswahili version. This provided the research assistants with latitude of using either of the languages in the administration based on the competencies of a respondent.

The study conducted KIIs targeting the Project Manager from ITDG-EA using a KII schedule (Appendix D) and the County Urban Development Officer from each town using an interview schedule (Appendix E). The Project Manager provided information on the objectives, delivery

model, post-implementation, sustainability, and challenges of the two projects. The County Urban Development Officer provided information on the role of the respective local authorities in the implementation and sustainability of the two projects under review.

The study conducted one FGD with officials of the local CBOs affiliated to each project across its project sites based on a guide (Appendix F). The venue for the FGD of the IUHP was Bondeni Primary School in the Bondeni project site, while that of the BiP: PUP project was the Turkana CBO Hall in the Kipsongo project site. The information targeted included post-implementation stages, sustainability, impact, living conditions, and livelihoods. The study targeted one representative (official) from four most active CBOs from each project site in each secondary city (see Appendix G). The criteria for selecting the representative included a member and leader of the selected CBO, beneficiary of the project, and a resident of the project site in the pre-project, project and post-project periods. Thus, each FGD had 12 participants drawn from diverse CBOs across the project sites of each project. The study considered the 12 participants adequate for effective conversation, diversity and participation in the discussion. The FGDs provided an opportunity for clarification and elaboration on the information collected from the semi-structured questionnaire and KII. This produced a rich understanding of the lived experiences and perspectives of the beneficiaries about the projects. The researcher personally conducted the two FGDs and three KIIs and collected data through note-taking and audio-recording using a digital tape recorder (Dictaphone). The recordings facilitated precise transcription of the FGDs and interviews.

Lastly, the study conducted direct field observations to collect spatial data. Such data provided first-hand account of the status of the activities of the two projects and their impact on living conditions and livelihoods since completion 15 years ago. The spatial data were collected and recorded using a digital camera.

3.6.1 Validity of the Research Instrument

The study established the content validity of the research instruments that addressed the synchrony between the formulated items and the content of the key concepts measured in the

specific objectives. These concepts included post-implementation, community participation, and sustainability. The study developed the research instruments in line with the specific objectives and consulted supervisors for scrutiny and verification of their relevance of the content of the key concepts.

The instruments were piloted using a participatory slum upgrading project known as the Peoples' Plans into Practice (PPP) project in Kisumu City. The project was implemented in the year 2012 in Nyalenda and Manyatta slum settlements with the support from ITDG-EA. The aim of PPP was to improve the living conditions and livelihoods of slum dwellers through empowerment and increased access to basic services. The study used a purposive sample of 40 project beneficiaries (20 from each settlement) with a response rate of 80.0% (32). The choice of the sample size of 40 for the pilot study was based on recommendation by Browne (1995) of a sample of over 30 samples per group, and observations by Thabane et al. (2010) of using identical inclusion and exclusion criteria to that of main study.

The Project Manager from the ITDG-EA linked the researcher with the leadership of the local CBOs affiliated with the PPP project. The identified leaders assisted in identifying the sample and administering the semi-structured questionnaire. The pilot study assisted in determining the feasibility of the main study by ensuring relevance, testing data collection instructions, establishing challenges in administering the instruments, anticipating and amending any logistical procedural deficiencies, and conducting preliminary data analysis. The study used the results of the pilot study to modify and adjust the semi-structured questionnaire for the main study. The study considered the choice of the PPP and Kisumu, a primary city, for the pilot study because the same NGO (ITDG-EA) facilitated the project (the PPP) with similar objectives and approach like those of the IUHP and the BiP: PUP project. The ITDG-EA targeted Kisumu, Nakuru and Kitale for participatory slum upgrading. This similarity in the funding NGO, objectives and approaches of the three projects was lacking in other secondary cities in the country.

3.6.2 Reliability of Research Instrument

The pilot study was also used to test the reliability of the key concepts namely community participation in the ex-post monitoring and evaluation, community participation in the ex-post maintenance, sustainability and livelihood outcomes. A Cronbach Coefficient Alpha (α) was computed for each concept. According to Cronbach (1951), George and Mallery (2010), and Streiner (2003), the α value ranges from 0 to 1.0. The criterion considers a value of 0.9 and above as very good; between 0.80 and less than 0.9 as good; between 0.7 and less than 0.8 as acceptable; and less than 0.7 as low reliability. The established α values in this study included $\alpha = 0.799$ for community participation in ex-post monitoring and evaluation, $\alpha = 0.784$ for community participation in ex-post maintenance, $\alpha = 0.889$ for the sustainability, $\alpha = 0.712$ for impact on living conditions and $\alpha = 0.793$ for impact on livelihood outcome. Using the above criterion, the study considered these reliability coefficient values acceptable in indicating the reliability of the concepts under study.

3.7 Data Analysis

The collected quantitative and qualitative data were processed and analyzed to address the specific objectives of the study and test the associated null hypotheses. The unit of observation was the individual project beneficiary, while the unit of analysis was the two slum upgrading projects –IUHP and BiP: PUP project. The collected quantitative data was analyzed with the aid of the Statistical Package for Social Sciences (SPSS) version 25.0 for Windows for each specific objective and null hypotheses as follows:

Objective one assessed the level of community participation in the post-implementation stages of monitoring and evaluation, and maintenance of the IUHP and BiP: PUP projects as perceived by the project beneficiaries. From the literature review, each of the post implementation stage was multidimensional with various indicators based on the activities involved. The post-implementation monitoring and evaluation had five indicators namely: progress and success, reporting of progress, taking corrective measures of lessons learnt, access to reports and information, and keeping the project on track, on-time and within budget (UN-Habitat, 2014a; White, 2011; World Bank, 2009a). The post-implementation maintenance had three indicators

namely: assignment of roles and responsibilities, capacity building and empowerment, and carrying out day-to-day maintenance activities (Morfaw, 2014; UN-Habitat, 2014a).

The study translated the selected indicators into a set of generic statements and asked the respondents to rate their perceived level of participation in each post-implementation stage on a five-point Likert scale ranging from 1 to 5. This represented a continuum from passive (minimum) participation to active (maximum) participation, where 1 indicated no participation (NP), 2 indicated low (indirect) participation (LP), 3 indicated average (consultative) participation (AP), 4 indicated high/active (shared control) participation (HP), and 5 indicated very high (full control) participation (VHP).

The study aggregated the individual scores of all the indicators for each stage into a single composite index score (see Nardo et al., 2005; Saisana & Tarantola, 2002, for more detail) for each respondent known as the Community Participation Index (CPI) score. The higher the CPI score, the higher was the level of participation in each post-implementation stage as perceived by the project beneficiaries, and vice versa (see Böhringer & Jochem, 2007; Ness et al., 2007; Sanchez & Lopez, 2010; Singh et al., 2012). The score for the ex-post monitoring and evaluation ranged from a value of 5 to 25, while that of the ex-post maintenance ranged from a value of 3 to 15. The study transformed the CPI score into three ordinal categories (see Edwards & Kenney, 1946; Kothari, 1990, for more detail) namely low (indirect), average (consultative), and high (shared and full control) to facilitate differentiation between the levels of participation among the respondents.

The objective one was operationalized through the first null hypothesis, which stated that: “there was no statistically significant difference in the level of community participation in the post-implementation monitoring and evaluation, and maintenance between the two projects as perceived by the project beneficiaries.” The study used the Independent Samples t-test to establish whether there was any significant difference in the CPI scores of the two post-implementation stages between the two unrelated samples, that is, the IUHP and BiP: PUP projects. The application of the Independent Samples t-test depends on number of key

assumptions/conditions namely scale of measurement, independence of observations, normal distribution, homogeneity of variances, and no significant outliers in the data set. The scale of measurement requires the dependent (test) variable measured on a continuous (interval or ratio) scale (i.e. the CPI score in this case), while the independent (grouping) variable be on a categorical (nominal) scale consisting of two categorical and independent groups (the two projects). The observations in one group should not in any way related to observations in another group in any systematic way other than that the two groups selected from the same population. The dependent variable has approximately normal distribution for each group of the independent variable. The distribution or comparison of distributions share the same level of variance within the particular group of data points - homogeneity (homoscedasticity) of variances. Lastly, there should be no significant outliers in the data set. After fulfilling the above assumptions, the study tested the t-test at $\alpha = 0.01(1\%)$ significance level (99% confidence level).

Objective two evaluated the level of sustainability of the IUHP and BiP: PUP project implemented 15 years ago as perceived by the project beneficiaries. This study adopted and evaluated the three dimensions proposed by Lyons et al. (2001) and Schenck and Louw (1995) to measure sustainability of a community development project. These dimensions included project longevity (project sustainability), long-term impact to individual beneficiaries (personal sustainability), and long-term impact to entire community (community sustainability). The study selected two main indicators for each dimension and translated them into a set of generic statements rated by the respondents on a five-point Likert scale ranging from 1 to 5. This represented a continuum from no sustainability to maximum sustainability, where 1 indicated no sustainability (NS), 2 indicated low sustainability (LS), 3 indicated average sustainability (AS), 4 was high sustainability (HS) and 5 indicated very high sustainability (VHS). The study aggregated the individual scores of the six indicators of the three dimensions into a single numeric composite index score for each respondent known as sustainability index score. The higher the index score, the higher was the level of sustainability of the two projects as perceived by the project beneficiaries. The index score ranged from a value of 6, indicating no sustainability, to 30 indicating very high sustainability. The study transformed the index score

into three ordinal categories of low, average and high sustainability to facilitate differentiation among the respondents.

The objective was operationalized using the second null hypothesis, which stated that: “there was no statistically significant difference in the level of sustainability of slum upgrading between the two projects as perceived by the project beneficiaries.” The study used the Independent Samples t-test to establish whether there was any significant difference in the sustainability index scores between the two unrelated samples, that is, the IUHP and BiP: PUP projects. The study based application of the Independent Samples t-test on various assumptions as indicated in objective one above. After fulfilling the above assumptions, the study tested the t-test at $\alpha = 0.01(1\%)$ significance level (99% confidence level).

Objective three determined the influence of the community participation in the post-implementation monitoring and evaluation, and maintenance on sustainability of the IUHP and BiP: PUP projects through the perceptions of project beneficiaries. From the literature review, community (beneficiary) participation in the post-implementation monitoring and evaluation, and maintenance has a significant and positive influence on sustainability of the slum upgrading. The study operationalized the objective using the third null hypothesis, which stated that: “community participation in the post-implementation monitoring and evaluation, and maintenance had no statistically significant influence on sustainability of the two projects as perceived by the project beneficiaries.” This study quantified and measured beneficiary participation in the post-implementation monitoring and evaluation, and maintenance (see objective one), and sustainability of the two projects (see objective two) on a continuous scale as composite index scores. As a result, the study used the Pearson’s Product Moment Correlation Coefficient(r) and the multiple regression(r^2) to determine the relationship between the two variables. The study corroborated the results using the Pearson’s Chi-Square test (χ^2) as a test of independence (association) by transforming the indices (continuous variables) into categorical variables in terms of levels for the independent and dependent variables. Before using the two parametric tests, that is, the Correlation Coefficient(r) and the multiple regression(r^2), the study

tested the underlying assumptions/conditions namely linearity, no autocorrelation (independence), homoscedasticity (equal variance), normality and no multicollinearity - independent variables are correlated with each other leading overlap in explaining variation in the dependent variable.

The study determined the strength and direction of the relationship between community participation in the post-implementation stages and the sustainability of the projects using r . The goal was to establish the covariation of the two variables and the magnitude of the strength of the relationship between them. From the expected association, the generated CPI scores for ex-post monitoring and evaluation, and ex-post maintenance were the independent variables, while the sustainability index score was the dependent variable (see Figure 2.2). The value of r , which ranges from $-1 \leq r \leq +1$, was used to determine the strength of the relationship, while the sign of r (+, -) defined the direction of the relationship, either positive or negative. The closer the value of r was to -1 or +1, the stronger was the relationship between the two variables. The closer the value of r was to zero, the weaker was the relationship between each independent variable and the dependent variable. The study tested the significance of the association between each of the independent variables and the dependent variable at $\alpha = 0.01(1\%)$ significance level. The study used a p -value to establish the significance of the association. If the calculated p value is equal to or less than the significance value (α), then the study considered the association as significant, and vice versa.

From the significance of the correlation results, the study further determined the combined contribution of beneficiary participation in the two post-implementation stages (independent variables) to changes in the sustainability of the two projects (dependent variable) using multiple regression. The study used multiple regression to estimate the amount of change in the sustainability explained by the combined community participation in the two post-implementation monitoring and evaluation, and maintenance. It measured the strength of the relationship between combined two independent variables and the dependent variable using a multiple correlation coefficient symbolized by R . The value of R ranges from 0 to +1 and can

never be negative. The closer the value of R to +1, the stronger was the relationship; the closer the value of R to 0, the weaker the relationship. The multiple regression analysis used a stochastic regression model, which had an error term (e) to account for the effect/influence of other independent variables other than those included in the study. The model was given by

$$y = a + \beta_1 x_1 + \beta_2 x_2 + e$$

Where

y = sustainability of the two projects (dependent variable),

a = constant,

β_1 = regression coefficient of the CPI score for ex-post maintenance

β_2 = regression coefficient of the CPI score for ex-post monitoring and evaluation

x_1 = Community participation in ex-post maintenance (independent variable)

x_2 = Community participation in ex-post monitoring and evaluation (independent variable)

e = error term

The standardized partial regression coefficients (β) measured the amount of change in the sustainability of the IUHP and BiP: PUP projects associated with a unit change in community participation in one of the post-implementation stages (e.g. monitoring and evaluation) while controlling the effect of the other stage (e.g. maintenance) in the model. The study used the standardized partial regression coefficients measured as composite index scores, that is, they had the same units of measurement for comparison purposes. From the sign β , the study inferred the nature of the relationship between community participation in each of the post-implementation stages and the sustainability of the two projects.

From the calculated R , the study measured the combined influence of community participation in the post-implementation monitoring and evaluation, and post-implementation maintenance in explaining variations in the sustainability of the two projects using a coefficient of determination (R^2). The value of R^2 indicates the percentage of the total variation (change) in sustainability (y) explained or accounted for by combined community participation in the two

post-implementation stages (x_i) in the derived multiple regression model. The higher the value of R^2 , the greater was the contribution of community participation in post-implementation in explaining the variation in the sustainability. However, since the value of R^2 usually varies depending on n (the number of data pairs) and k (the number of independent variables), a more stable and realistic value of R^2 known as adjusted R^2 (R^2_{adj}) was used. The R^2_{adj} is a measure of regression model adjusted for n and k to control for any idiosyncratic variance (by pure chance) in the original estimate and provide a more realistic value of R^2 . This was important given the variations in the number of respondents who participated in the two post-implementation stages of the IUHP and BiP: PUP projects (see Table 4.6.1).

The study used the stepwise method to enter each independent variable (community participation in ex-post monitoring and evaluation, and ex-post maintenance) in the regression model according to the magnitude of its contribution to changes in the dependent variable (sustainability of the two projects) measured by the R^2_{adj} . The study tested the significance of the derived multiple regression model using the F-test at $\alpha = 0.01(1\%)$ significance level.

The study corroborated the results of Pearson's Correlation Coefficient and multiple regression (parametric tests) using Pearson's Chi-Square (χ^2) test as a non-parametric test. Since the χ^2 test deals with associations of categorical variables, this study transformed CPI scores (in objective one) and sustainability index score (in objective two) into categorical variables in terms of ordinal levels i.e. levels of participation and levels of sustainability, respectively. The study compared the frequency of cases found in the formed categorical variables by cross tabulating the levels of community participation in the two post-implementation stages (independent variables) across the levels of sustainability (dependent variable). The significance of the χ^2 test results was also tested at $\alpha = 0.01$ (1%) significance level. After establishing a statistical significance between the two categorical variables, the study converted the calculated χ^2 test value into a measure of coefficient of association to determine the strength and magnitude of the association. This was done using the Contingency Coefficient (C) given by:

$$C = \sqrt{\frac{\chi^2}{\chi^2 + N}}$$

where: χ^2 is the calculated χ^2 test value

N is the grand total from the contingency table (same as the sample size)

The value of C ranges from 0 (no relationship/association) to 1 (perfect relationship/association) between the two variables. The closer to 1, the stronger was the relationship/association between the two variables, and vice versa.

Objective four sought to assess the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the living conditions in the selected slum settlements. The study adopted a recommendation of the UN (2010) and UN-Habitat (2014a) that the overall aim of slum upgrading is to improve the living conditions by addressing the five key characteristics of a slum settlement. The characteristics include inadequate access to improved water, inadequate access to sanitation, poor structural quality of housing, lack of security of tenure, and overcrowding. The study determined the perception of the project beneficiaries about the impact of the two projects on each of the key characteristics by comparing their conditions in the pre-project, project and post-project periods on a five-point Likert scale ranging from 0 to 4. This represented a continuum from no impact to very high impact, where 0 indicated no impact (NI), 1 indicated low impact (LI), 2 indicated average impact (AI), 3 was high impact (HI) and 4 indicated very high impact (VHI). The study aggregated the individual scores of the five key characteristics of a slum settlement into a single numeric composite index score for each respondent known as living condition index score. The higher the index score, the higher was the level of impact of the two projects on the living conditions as perceived by the project beneficiaries. The index score ranged from a value of 0, indicating no impact, to 20 indicating very high impact. The study transformed the index score into three ordinal categories of low, average and high impact to facilitate differentiation among the respondents.

Objective four was operationalized using the fourth null hypothesis, which stated that: “there was no statistically significant difference in the perception of the beneficiaries about the impact of

slum upgrading on the living conditions of slum settlements between the two projects.” The Independent Samples t-test was used to establish whether there was any significant difference in the living conditions index scores between the two unrelated samples, that is, the IUHP and BiP: PUP projects. The grouping variable (the two projects) was a categorical variable, while the test variable (the living conditions index score) was a continuous (interval) variable. The Independent Samples t-test was tested as $\alpha = 0.01(1\%)$ significance level.

Objective five assessed the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the living conditions in the selected slum settlements. The respondents were asked about their current livelihood strategies, directly or indirectly influenced by the activities of the two projects. The study further determined the respondents’ perception of the impact of these livelihood strategies on six selected livelihood outcomes derived from literature review and theoretical framework. These livelihoods outcomes included household income, food security, well-being (quality of life – health and socio-economic status), vulnerability, access to credit, and security of tenure. The study quantified and measured the perceived impact of the two projects on a five-point Likert scale ranging from 0 to 4. This represented a continuum from no impact to very high impact, where 0 indicated no impact (NI), 1 indicated low impact (LI), 2 indicated average impact (AI), 3 was high impact (HI) and 4 indicated very high impact (VHI). The study aggregated the individual scores of the six selected livelihood outcomes into a single numeric composite index score for each respondent known as the livelihood outcome index score. The higher the index score, the higher was the level of impact of the two projects on the livelihood outcomes as perceived by the project beneficiaries. The index score ranged from a value of 0, indicating no impact, to 24 indicating very high impact. The study transformed the index score into three ordinal categories of low, average and high impact to facilitate differentiation among the respondents.

Objective five was operationalized using the fifth null hypothesis, which stated that: “there was no statistically significant difference in the perception of the beneficiaries about the impact of slum upgrading on the livelihoods of slum dwellers between the two projects.” The study used the Independent Samples t-test to establish whether there was any significant difference in the

livelihood outcomes index scores between the two unrelated samples, that is, the IUHP and BiP: PUP projects. The grouping variable (the two projects) was a categorical variable, while the test variable (the livelihood outcomes index score) was a continuous (interval) variable. The Independent Samples t-test was tested as $\alpha = 0.01(1\%)$ significance level.

Table 3.7.1 summarizes the quantitative analysis that included each null hypothesis, the targeted variables (independent and dependent), level of measurement of the variables and the statistical techniques used.

Table 3.7.1

Summary of Data Analysis Matrix

Null hypotheses	Independent Variable	Dependent Variable	Measurement scale	Data analysis technique
H₀₁: There was no statistically significant difference in the level of community participation in the post-implementation monitoring and evaluation, and maintenance between the two projects as perceived by the project beneficiaries.	Slum upgrading projects: ✓ IUHP ✓ BiP: PUP	Participation in ✓ Monitoring and evaluation ✓ Maintenance Measurement ✓ CPI score ✓ Low, average and high	Independent variable (categorical) Dependent variable (Continuous)	✓ Descriptive statistics ✓ Independent Samples t-test ✓ Pearson's Chi Square
H₀₂: There was no statistically significant difference in the level of sustainability of slum upgrading between the two projects as perceived by the project beneficiaries.	Slum upgrading projects: ✓ IUHP ✓ BiP: PUP	Dimensions of sustainability: ✓ Project ✓ Personal ✓ Community Measurement ✓ Sustainability index score ✓ Low, average and high	Independent variable (categorical) Dependent variable (Continuous)	✓ Descriptive statistics ✓ Independent Samples t-test ✓ Pearson's Chi Square

<p>H03: Community participation in the post-implementation monitoring and evaluation, and maintenance had no statistically significant influence on sustainability of the two projects as perceived by the project beneficiaries.</p>	<p>Community participation in ex-post monitoring and evaluation, and maintenance</p> <p>Measurement: ✓ CPI score</p>	<p>Dimensions of sustainability: ✓ Project ✓ Personal ✓ Community</p> <p>Measurement ✓ Sustainability index score</p>	<p>Independent variable (Continuous)</p> <p>Dependent variable (Continuous)</p>	<p>✓ Pearson's Correlation Coefficient</p> <p>✓ Multiple Regression</p>
<p>H04: There was no statistically significant difference in the perception of the beneficiaries about the impact of slum upgrading on the living conditions of slum settlements between the two projects.</p>	<p>Slum upgrading projects: ✓ IUHP ✓ BiP: PUP</p>	<p>Characteristics of a slum settlement: ✓ Access to improved water and sanitation, ✓ Improved structural quality of housing, ✓ Reduced overcrowding ✓ Improved security of tenure</p> <p>Measurement of impact ✓ Living condition index score</p>	<p>Independent variable (categorical)</p> <p>Dependent variable (Continuous)</p>	<p>✓ Descriptive statistics</p> <p>✓ Independent Samples t-test</p> <p>✓ Pearson's Chi Square</p>

<p>H₀₅: There was no statistically significant difference in the perception of the beneficiaries about the impact of slum upgrading on the livelihoods of slum dwellers between the two projects.</p>	<p>Slum upgrading projects: ✓ IUHP ✓ BiP: PUP</p>	<p>Selected livelihood outcomes: ✓ Improved incomes ✓ Improved well-being ✓ Improved access to credit ✓ Improved security of tenure ✓ Improved food security ✓ Reduced vulnerability</p> <p>Measurement of impact ✓ Livelihood index score</p>	<p>Independent variable (categorical) Dependent variable (Continuous)</p>	<p>✓ Descriptive statistics ✓ Independent Samples t-test ✓ Pearson's Chi Square</p>
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The qualitative data collected using the FGDs, KIIs, direct field observations, and open-ended items in the semi-structured questionnaire were analyzed using thematic analysis. The aim was to bring out individualized perspectives on the various concepts by allowing greater latitude, depth, and diversity of responses to supplement the quantitative data across all the five specific objectives and associated null hypotheses. Thematic analysis is a method used to identify, analyze and report patterns (themes) derived from the collected qualitative data (Auriacombe & Mouton, 2007; Bryman, 2012) including recorded communication (transcripts of interviews, tape recorder, documents ...) or information recorded in interview audio or photographs to make valid inferences (Jones, 2008). The study used the method to establish the views, opinions, knowledge, and experiences of the respondents on the various aspects of the five specific objectives of the study. This entailed a three-stage procedure that included transcription, coding, and presentation of the data. The study transcribed the data from the notes taken and audio recordings and used a Microsoft Excel Spreadsheet to code them into themes, sub-themes, trends, patterns, and correlations that emerged. The study standardized the derived themes, trends, and patterns using a constant comparison method to compare them with those found in previous studies (see Jones, 2008; Ryan & Bernard, 2003). From the spreadsheet, the study converted the assigned codes into frequency distributions to establish recurrence. In addition, the study used direct quotations in some cases to maintain the accuracy of the transcribed text as reported by the respondents and justify conclusions derived.

The combination of quantitative and qualitative data analysis methods allowed triangulation and corroboration of the derived findings. This provided a more comprehensive understanding of the research problem from different perspectives, which increased the validity of the findings. The qualitative and quantitative methods complemented each other by counter-balancing their intrinsic strengths and weaknesses.

3.8 Ethical Considerations

This study implemented various ethical considerations during data collection, analysis, and reporting of the results. The study collected data after fulfilling the academic requirements for a Doctorate Degree of Egerton University namely: proposal presentation in the Department of

Geography and the Faculty of Environment and Resources Development, and approval by the Graduate School. The approval from Graduate School was used to obtain permission from the Egerton University Research Ethics Review Committee, which issued a Certificate of Ethical Clearance Approval (Appendix H). The study used the Certificate of Ethical Clearance Approval to apply for a research permit from the National Commission of Science, Technology, and Innovation (NACOSTI) (Appendix I). The research permit from NACOSTI was used to obtain permission for data collection from ITDG-EA and the respective County Governments of the two secondary cities under review.

During data collection, the study ensured informed consent by providing respondents with full disclosure of the study including the purpose, type of information targeted, data collection instrument, duration of the interviews, the inclusion and exclusion criteria, data analysis, and reporting and utilization of the findings. This was contained in a consent form (Appendix B) that allowed voluntary participation and guaranteed utmost privacy, confidentiality, and anonymity through deleting all direct personal identifiers and using serial numbers and general characteristics. The collected information was kept confidential and only used for this study.

CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents a discussion of the research findings based on the specific objectives and associated null hypotheses. The chapter has seven sections with each focusing on a specific subject matter. The first section discusses the response rate of the data collection instruments, while the second section presents the demographic characteristics of the respondents. The remaining five sections discuss the findings of the study in the context of the five specific objectives and associated null hypotheses.

4.2 Response Rate of the Research Instruments

The study targeted a sample of 392 respondents namely: 365 project beneficiaries, 2 County Urban Development Officers, 1 Project manager from ITDG-EA and 24 officials of local CBOs. The researcher interviewed project beneficiaries using a semi-structured questionnaire, had a KII for the County Urban Development Officers and the Project Manager of ITDG-EA, and conducted FGDs with the officials of the local CBOs. Table 4.2.1 summarizes the response rate for the various groups of respondents across the two projects under review.

Table 4.2.1

Response Rate of the Research Instruments

Respondent	Project	Sample	Returns	Response rate (%)
Projects beneficiaries	IUHP	83	82	98.80
	BiP: PUP	282	278	98.58
Project manager	IUHP and	1	1	100.0
	BiP: PUP			
County Urban Development officer	IUHP	1	1	100.0
	BiP: PUP	1	1	100.0
Officials of CBOs	IUHP	12	12	100.0
	BiP: PUP	12	12	100.0
Total		392	387	98.7

Information from Table 4.2.1 indicates that the study received 360 out of the 365 administered semi-structured questionnaires representing a response rate of 98.63% that included 98.80% (82) for the IUHP and 98.58% (278) for BiP: PUP project. In addition, the study successfully collected data from all the targeted 2 County Urban Development Officers, 1 Project manager from ITDG-EA and 24 officials of local CBOs. In total, the study collected data from 387 out of the targeted 392 respondents representing a response rate of 98.7%, which it considered as sufficient for making inferences from the results. Previous studies such as Mugenda and Mugenda (2003) considered a response rate above 70.0% as very good for making inferences.

The high response rate was attributed to the role played by the Project Manager in linking the researcher with prospective local CBOs, and the face-to-face administration of the semi-structured questionnaire aided by the snowball sampling method used. The officials of local CBOs used their social networks to identify and trace sample beneficiaries for interviews at their homes or places of work. The research assistants administered questionnaires on the spot and collected them immediately after the interviews. However, the 1.37% (5) non-response rate namely one from the IUHP and four from BiP: PUP project provided inconsistent and incomplete information, which was not included in the analysis and discussion of the findings. Table 4.2.2 summarizes the distribution of the sample project beneficiaries in the two projects.

Table 4.2.2

Distribution of the Sample Project Beneficiaries across the Project Sites

Project	Project Site	Frequency	%
IUHP (n = 82)	Lake View	27	7.5
	Bondeni	27	7.5
	Kwa Rhonda	28	7.8
BiP: PUP project (n = 278)	Shimo-La-Tewa	92	25.6
	Tuwan	93	25.8
	Kipsongo	93	25.8
Total		360	100.0

Information in Table 4.2.2 indicates that the 82 respondents from the IUHP included 7.5% (27) from Lake View, 7.5% (27) from Bondeni, and 7.8% (28) from Kwa Rhonda project sites. The 278 respondents from the BiP: PUP project included 25.6% (92) from Shimo-La-Tewa, 25.8% (93) from Tuwan, and 25.8% (93) from Kipsongo project sites.

4.3 Demographic Characteristics of the Respondents

This section described the selected demographic characteristics of the sample project beneficiaries. The description provided a profile of the respondents and the foundational details for the discussion of the subsequent results. The selected characteristics included age, gender, marital status, family size, education, and employment. These characteristics influenced and determined the activities as well as the standards of living of households.

4.3.1 Age Distribution of the Sample Project Beneficiaries

Age is an important socio-economic factor for conferring status differences in society and determining the roles, responsibilities, and decision-making power at the individual, household, and community levels. This is especially with respect to decision making and participation in development projects such as slum upgrading. Table 4.3.1 summarizes the age of the respondents and the number of years lived in the project sites.

Table 4.3.1

Age of the Sampled Beneficiaries and Years Lived in the Project Sites

Statistics	Project					
	IUHP		BiP: PUP		Total sample	
	Age (years)	Years lived in the area	Age (years)	Years lived in the area	Age (years)	Years lived in the area
Mean	58.41	37.45	48.64	35.26	50.86	35.76
Std. Deviation	14.131	15.653	11.974	13.357	13.136	13.921
Minimum	32	15	32	15	32	15
Maximum	93	68	84	72	93	72
N	82		278		360	

Information in Table 4.3.1 reveals that the respondents had a mean age of 50.86 ± 13.136 years with those from the IUHP recording 58.41 ± 14.131 years, while those from BiP: PUP project recorded 48.64 ± 11.974 years. In addition, the respondents had lived in the project sites for an average of 35.76 ± 13.921 years with those from the IUHP recording 37.45 ± 15.653 years, while those from BiP: PUP project recorded 35.26 ± 13.357 years. The mean age and years lived in the project sites suggests that the respondents had lived in the two study areas long enough and thus expected to have gained sufficient knowledge and experiences about the living conditions of their settlements during the pre-project, project and post-project periods.

4.3.2 Gender Distribution of the Sample Project Beneficiaries

In addition to age, gender is an important universal dimension on which society bases and confers status differences. Women and men differ in their needs, challenges, opportunities, and potentials in a slum settlement, which influences their expected roles, responsibility, and decision-making power. Figure 4.3.1 summarizes the gender distribution of the sample project beneficiaries across the two projects.

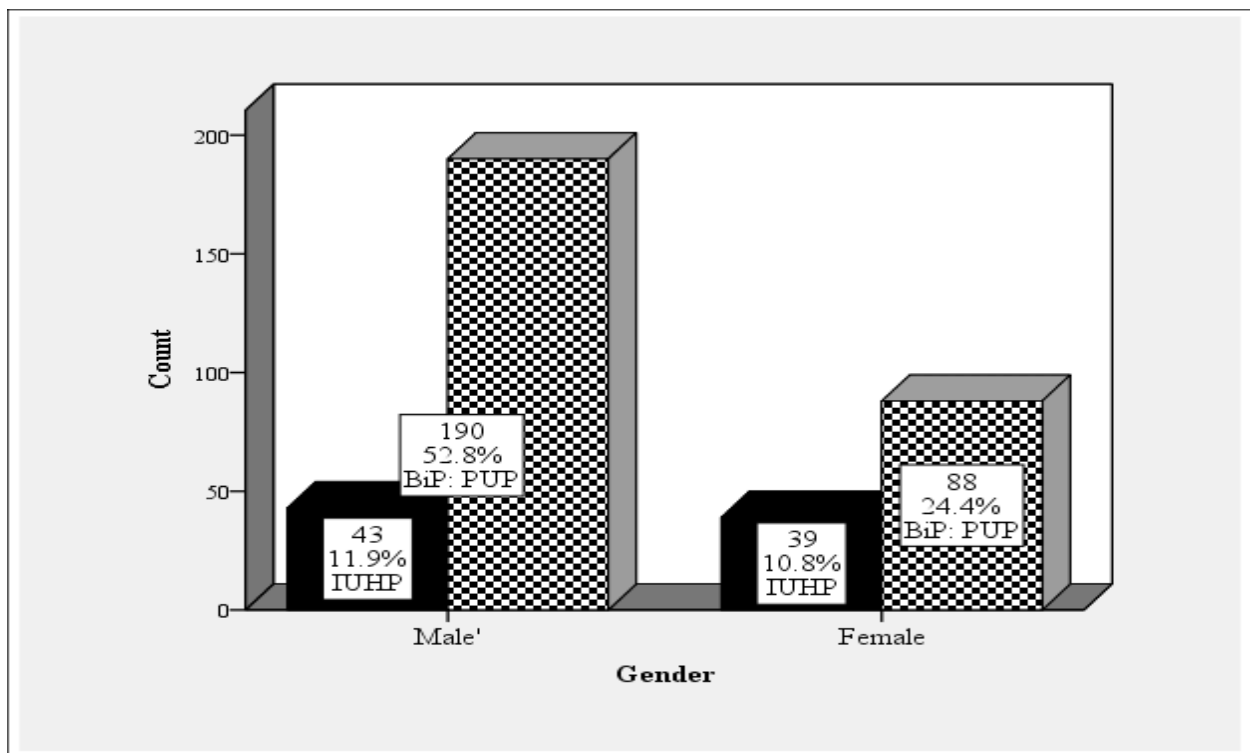


Figure 4.3.1: Gender Distribution of Sample Project Beneficiaries across the Projects

Information in Figure 4.3.1 shows that 64.7% of the respondents were male, including 52.8% from the BiP: Project and 11.9% from IUHP. The remaining 35.3% were female, including 24.4% from the BiP: PUP project and 10.8% from IUHP. This suggests that more male residents participated and benefited from the two projects compared to their female counterparts. The study attributed the variation in the gender distribution to the dominance of men in the leadership of local CBOs affiliated with the two projects. The ITDG-EA used the leadership of these CBOs as gatekeepers and entry points into the project sites. In addition, domestic roles and responsibilities limited women from actively participating in the various activities of the two projects, especially those implemented away from the homestead. Regardless of the variation in gender distribution, the two projects included both male and female residents as project beneficiaries.

4.3.3 Marital Status of the Sample Project Beneficiaries

The marital status of a slum resident influences the social and economic status of a household and the magnitude of the challenges that one faces in the settlement. Table 4.3.2 shows the diversity in marital status of the sample project beneficiaries across the two projects.

Table 4.3.2

Marital Status of the Sample Project Beneficiaries

		Project		Total
		IUHP	BiP: PUP	
Marital status	Married	69 (84.1%)	204 (73.4%)	273 (75.8%)
	Never married	5 (6.1%)	13 (4.7%)	18 (5.0%)
	Separated	0 (0.0%)	21 (7.6%)	21 (5.8%)
	Divorced	2 (2.4%)	9 (3.2%)	11 (3.1%)
	Widow/widower	6 (7.3%)	31 (11.2%)	37 (10.3%)
Total		82	278	360

Information from Table 4.3.2 shows that 75.8% (273) of the respondents, including 84.1% (69) from the IUHP and 73.4% (204) from BiP: PUP project were married. In addition, 5.0% (18)

were not married, 5.8% (21) had separated, 3.1% (11) were divorced and 10.3 % (37) widowed. From field observations, the higher proportion (75.8%) of married respondents suggests that the respondents had settled in the project sites with their families. Such respondents were likely to be very much concerned about the living conditions of their settlements and the need to improve the situation through slum upgrading.

4.3.4 Family Size of the Sample Project Beneficiaries

The family size influences the social and economic burden of a household. Table 4.3.3 summarizes the family size of the sample project beneficiaries.

Table 4.3.3

Family Size of the Sample Project Beneficiaries

Statistics	IUHP	BiP: PUP	Total sample
Mean	6.73	6.41	6.48
Std. Deviation	3.682	3.225	3.332
Minimum	1	1	1
Maximum	20	15	20
N	82	278	360

Information from the table indicates that the mean family size was 6.48 ± 3.332 members with the IUHP recording 6.73 ± 3.682 , while BiP: PUP project recorded 6.41 ± 3.3225 . The findings suggest large family sizes given the high level of deprivation in the project sites in terms of poor living conditions and livelihoods.

4.3.5 Level of Education of the Sample Project Beneficiaries

The level of education influences the perception of people about availability and access to opportunities, participation in decision-making, and the general well-being of an individual. Table 4.3.4 illustrates the highest level of education of the sample project beneficiaries.

Table 4.3.4
Highest Level of Education of the Sample Project Beneficiaries

		Project		
		IUHP	BiP: PUP	Total
The highest level of education attained	None	0 (0.0%)	40 (14.4%)	40 (11.1%)
	Primary incomplete	22 (26.8%)	115 (41.4%)	137 (38.1%)
	Primary complete	22 (26.8%)	45 (16.2%)	67 (18.6%)
	Secondary incomplete	9 (11.0%)	34 (12.2%)	43 (11.9%)
	Secondary complete	13 (15.9%)	34 (12.2%)	47 (13.1%)
	Post-secondary	16 (19.5%)	10 (3.6%)	26 (7.2%)
Total		82	278	360

Information in Table 4.3.4 shows that 81.7% (294) of the respondents attained primary and secondary school levels of education, 11.1% (40) had not attended any school, and 7.2% (26) had post-secondary school education. All the respondents from the IUHP had attained some level of education with 19.5% of them having post-secondary school education. In contrast, 14.4% of the respondents from the BiP: PUP project had no formal education while only 3.6% of them had post-secondary school education. The study attributed the variation to the differences in social and economic indices between the secondary cities of Kitale and Nakuru. Nakuru was ranked fourth-largest urban centre in the country in terms of socio-economic indicators compared to Kitale (GoK, 2000b). The levels of education were likely to influence awareness, participation, and decision-making power among the respondents.

4.3.6 Employment Status Sample Project Beneficiaries

The employment status of beneficiaries influences their livelihood strategies, livelihood outcomes, and levels of well-being. Figure 4.3.2 illustrates the variations in the employment status of the sample project beneficiaries.

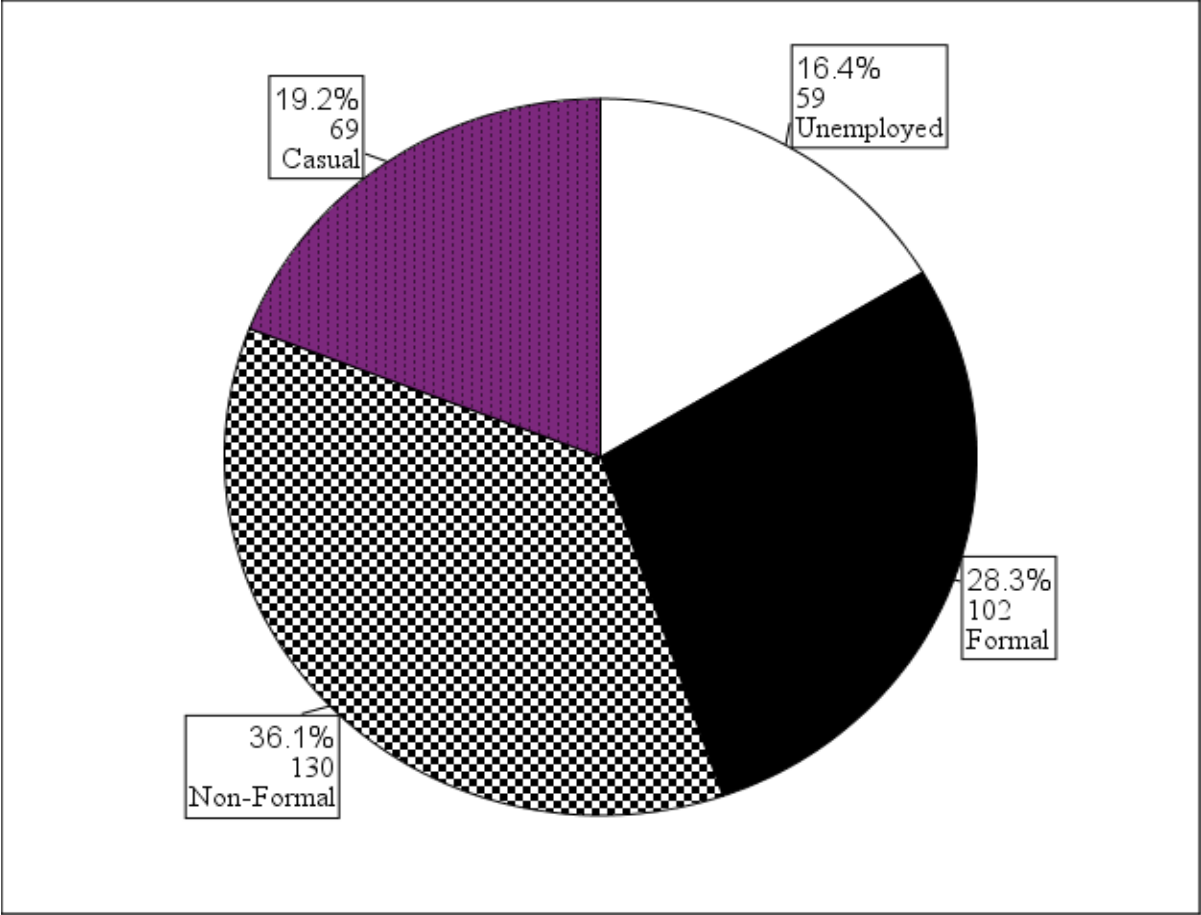


Figure 4.3.2: Employment Status of Sample Project Beneficiaries

Information in Figure 4.3.2 indicates that 83.6% of the respondents had some form of employment in the formal sectors (28.3%), informal sector (36.1%), and casual engagement (19.2%). Field observations further established that employment in the informal sector included the operation of small businesses at home and/or in the various small market centres. The informal jobs included street vending, hawking, garbage collection, motorcycle riding, water vending, and casual labourers in construction sites.

Information arising from the two FGDs indicates that the informal sector was the primary provider of job opportunities. However, the respondents reported that the sector had low earnings and lacked job security, which contributed to the high levels of poverty. These results were consistent with findings of Githira et al. (2020) in an analysis of Multiple Deprivations in

Secondary Cities in Sub-Saharan Africa observed that in Kenya informal employment is higher in secondary towns (Nakuru, Kisii and Kilifi) than in Nairobi. A study by Dhar Chakrabarti (2001) on informal settlements and workplaces in Delhi, and another study by Syagga (2011) on land tenure in slum upgrading projects in Nairobi, indicated that majority of the urban poor in developing countries engaged in the informal sector. However, Mathur (2013) in a study on urban poverty in Manila argued that the informal economy was vulnerable to economic shocks and stress, and hence lower earnings compared to the formal economy.

4.4 Participation in Ex-Post Stages of the IUHP and BiP: PUP Projects

Objective one assessed the level of community participation in the post-implementation monitoring and evaluation, and maintenance of the IUHP and BiP: PUP projects as perceived by the project beneficiaries. The study determined the awareness, involvement, and perceived beneficiary participation in the two post-implementation stages of the two projects as discussed in the subsequent sub-sections of 4.4.1 and 4.4.2. In addition, the objective was accompanied by the first null hypothesis, which sought to establish whether there was any significant difference in the perceived participation in the post-implementation between the two projects as illustrated in sub-section 4.4.3.

4.4.1 Perceived Participation in Post-Implementation Monitoring and Evaluation

This study conceptualized post-implementation monitoring and evaluation as the measurement of the impact of the IUHP and BiP: PUP projects through provision of essential and regular feedback on the progress in achieving the goals and objectives. It sought to establish the awareness, involvement, and perceived beneficiary participation in the two post-implementation monitoring and evaluation of the two projects. The respondents were asked about their awareness of post-implementation monitoring and evaluation of their project. Table 4.4.1 summarizes their responses.

Table 4.4.1

Beneficiary Awareness of the Ex-Post Monitoring and Evaluation

		Project		
		IUHP	BiP: PUP	Total
Awareness	Yes	61 (74.4%)	135 (48.6%)	196 (54.4%)
	No	9 (11.0%)	73 (26.3%)	82 (22.8%)
	Don't know	12 (14.6%)	70 (25.2%)	82 (22.8%)
Total		82	278	360

Information in Table 4.4.1 indicates that 54.4% (196) of the respondents, including 74.4% (61) from the IUHP and 48.6% (135) from BiP: PUP project, were aware of post-implementation monitoring and evaluation of the two projects. The respondents reported that the funding NGO actively engaged them in all stages of the two projects through regular project meetings and site visits. The study established that majority of the activities of the IUHP directly targeted individual respondents, which motivated their interest in the post-implementation monitoring and evaluation. In contrast, the BiP: PUP project implemented several joint activities targeting the entire community with the benefits expected to spill over to individual beneficiaries. However, respondents reported that it took a longer period to actualize benefits to individual members leading to low awareness and motivation in the post-implementation monitoring and evaluation of the project. Those who were not aware of the post-implementation monitoring and evaluation reported lack of relevant and reliable information about the process. Others observed that they did not know about the opportunity, since no one ever asked or invited them.

The respondents (54.4%) who were aware of the post-implementation monitoring and evaluation were asked about their involvement in the various activities of the stage. Table 4.4.2 depicts their responses.

Table 4.4.2

Beneficiary Involvement in the Ex-Post Monitoring and Evaluation

		Project		Total
		IUHP	BiP: PUP	
Involvement in ex-post monitoring and evaluation	Yes	49 (80.3%)	109 (80.7%)	158 (80.6%)
	No	12 (19.7%)	26 (19.3%)	38 (19.4%)
Total		61	135	196

Information in Table 4.4.2 shows that 80.6% (158) of the respondents were involved in the post-implementation monitoring and evaluation of the two projects, including 80.3% from the IUHP and 80.7% from BiP: PUP project. This indicates that awareness influenced the involvement of the respondents in the post-implementation monitoring and evaluation. The remaining 19.4% (38) of the respondents were not involved. The non-awareness and non-involvement of some of the respondents were likely to deny them the opportunity to track progress, assess the real impact, and take corrective actions in the two projects.

From the awareness and involvement in the post-implementation monitoring and evaluation, the study sought to establish the perceived level of beneficiary participation in the process. The study identified five indicators of the post-implementation monitoring and evaluation from literature review. The indicators included evidence of progress and success, reporting of progress, taking corrective measures, access to reports and information, and keeping the project on track. The study translated these indicators into a set of generic statements and asked the 158 respondents who were aware of and involved in this ex-post stage (Table 4.4.2) to rate their perceived level of participation on a five-point Likert scale ranging from 1 to 5 as described in Section 3.7. Table 4.4.3 summarizes the respondents' perceived ratings of their participation in the established indicators.

Table 4.4.3

Rating of Participation in Indicators of Ex-Post Monitoring and Evaluation

<i>Participation in:</i>	<i>Response (%)</i>					<i>IUHP</i>		<i>BiP: PUP</i>		<i>Total sample</i>	
	NP	LP	AP	HP	VHP	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Identification, discussion and agreement on evidence of progress and success	1.3	4.4	28.5	18.4	47.5	4.73	0.569	3.76	1.044	4.06	1.026
Taking corrective measures on lessons learnt	2.5	15.2	20.3	28.5	33.5	4.43	0.707	3.45	1.182	3.75	1.149
Keeping the project on-track	1.3	13.9	16.5	55.7	12.7	3.90	0.770	3.53	0.958	3.65	0.917
Accessing monitoring and evaluation reports and information	1.9	16.5	22.8	37.3	21.5	3.86	0.979	3.49	1.077	3.60	1.058
Reporting of progress	3.2	14.6	31.0	31.0	20.3	3.96	0.841	3.30	1.101	3.51	1.069
N						49		109		158	

Information in Table 4.4.3 indicate that the respondents rated all the five indicators above the average score of 3.00 suggesting a perceived active participation in identification of evidence of progress and success, taking corrective measures on lessons learnt, keeping the project on track, accessing monitoring and evaluation reports and information, and reporting of progress. However, the IUHP recorded higher mean scores in all the five indicators, compared to BiP: PUP project. The respondents from the IUHP reported that the direct and individual benefits intrinsically motivated them to regularly monitor and evaluate its activities. In contrast, the activities of the BiP: PUP project prioritized the community with benefits expected to trickle down to individual members over time.

The study aggregated the individual scores of all the five indicators into a CPI score. The higher the CPI score, the higher was the perceived level of participation in the post-implementation monitoring and evaluation of the two projects, and vice versa. The CPI score ranged from a value of 5, indicating passive participation to 25, indicating active participation⁴. The score had a reliability coefficient of $\alpha = 0.799$ with a mean of 18.57 ± 3.896 . The study transformed the CPI score into three ordinal categories namely a score of 5-11 (low/indirect participation), 12-18 (average/consultative participation), and 19-25 (high/active participation - shared control and full control). Table 4.4.4 summarizes the respondents' overall perceived level of participation in the post-implementation monitoring and evaluation of the two projects.

⁴ $5 \times 1 = 5$ (No participation)
 $5 \times 3 = 15$ (Average/moderate participation)
 $5 \times 5 = 25$ (High participation)

Table 4.4.4

Level of Perceived Participation in the Ex-Post Monitoring and Evaluation

		Project		Total
		IUHP	BiP: PUP	
Perceived level of participation	Low	0 (0.0%)	8 (7.3%)	8 (5.1%)
	Average	8 (16.3%)	47 (43.1%)	55 (34.8%)
	High/active	41 (83.7%)	54 (49.5%)	95 (60.1%)
Total		49	109	158

Information in Table 4.4.4 indicates that 83.7% (41) and 49.5% (54) of the respondents from the IUHP and BiP: PUP projects, respectively, perceived a high (active) participation in post-implementation monitoring and evaluation. The study established that the direct and individual benefits from the activities of IUHP motivated beneficiaries to develop a positive perception of their participation in the post-implementation monitoring and evaluation compared to the BiP: PUP project, which prioritized communal benefits. A combined 60.1% (95) of the respondents recorded active participation in the post-implementation monitoring and evaluation with shared and full control over the content, process, results, and corrective measures of the two projects.

The findings in Tables 4.4.1 through 4.4.4 demonstrate that more than a half (54.4%) of the sample beneficiaries was aware of post-implementation monitoring and evaluation of the two projects, with majority (80.6%) of them involved in the process. As primary consumers of slum upgrading, the beneficiaries actively participated in monitoring and evaluating the progress and impact of the implemented interventions. The beneficiaries tracked the progress, assessed real impact, made decisions, and took corrective measures from the lessons learnt. This encouraged them to assume ownership and responsibility of the projects to ensure long-term benefits even after the exit of the external agencies. This allowed the beneficiaries to have shared and full control over the content, process, and results and take corrective actions and measures in the post-implementation monitoring and evaluation.

These findings were consistent with observations from previous studies that supported active participation in the post-implementation monitoring and evaluation. For example, Meri (2016) in

a study about determinants of effective monitoring and evaluation systems for non-profit projects in Nairobi observed that active participation empowers beneficiaries and fosters ownership, accountability, transparency, outcomes, and sustainability of a project. However, Imparato and Ruster (2003) while studying slum upgrading and participation from Latin America, argued that the success of any intervention depends of the availability of a reliable monitoring and evaluation system to provide an audit trail or record of decisions and actions taken, gauge the real impact, and sound an alarm of when things are going wrong. As a result, Ndou (2012) while studying reasons for failure of community-based projects in Limpopo observes that this scenario presents a lost opportunity for beneficiary buy-in, commitment, and ownership of projects, which in turn compromises the sustainability of projects.

4.4.2 Perceived Participation in the Post-Implementation Maintenance

This study conceptualized post-implementation maintenance as the ongoing repairs, protection, servicing, training, renovations, and other processes needed to preserve and maintain the IUHP and BiP: PUP projects. It sought to establish the awareness, involvement, and perceived beneficiary participation in the two post-implementation maintenance of the two projects. The respondents were asked about their awareness of post-implementation maintenance of their project. Table 4.4.5 summarizes their responses.

Table 4.4.5

Beneficiary Awareness of the Post-Implementation Maintenance Stage

		Project		
		IUHP	BiP: PUP	Total
Awareness of the ex-post maintenance	Yes	47 (57.3%)	179 (64.4%)	226 (62.8%)
	No	17 (20.7%)	84 (30.2%)	101 (28.1%)
	Don't know	18 (22.0%)	15 (5.4%)	33 (9.2%)
Total		82	278	360

Information in Table 4.4.5 indicates that 62.8% (226) of the respondents were aware of post-implementation maintenance of the two projects including 64.4% (179) from the BiP: PUP project and 57.3% (47) from IUHP. The study established that the communal approach used by

the BiP: PUP project had devised a set of common rules and regulations that guided collective use and compulsory maintenance of joint activities such as rehabilitated natural springs. This ensured regular maintenance of the activities in the post-project period. This was in contrast with the IUHP where the maintenance of the individual activities varied depending on the interest and ability of the concerned beneficiary with no compulsion.

The 226 respondents (62.8%) who were aware of the post-implementation maintenance were asked about their involvement in the various activities of the stage. Table 4.4.6 depicts their responses.

Table 4.4.6
Beneficiary Involvement in the Post-Implementation Maintenance

		Project		Total
		IUHP	BiP: PUP	
Involvement in the ex- post maintenance	Yes	43 (91.5%)	148 (82.7%)	191 (84.5%)
	No	4 (8.5%)	31 (17.3%)	35 (15.5%)
Total		47	179	226

Information in Table 4.4.6 indicates that 84.5% of the respondents were involved in the post-implementation maintenance of the two projects, including 91.5% (43) from the IUHP and 82.7% (148) from BiP: PUP project. Thus, awareness of the sample beneficiaries about the post-implementation maintenance influenced their involvement in the process. Involving the project beneficiaries was the key to long-term impacts of the two projects. This ensured ownership of the projects and increased the chance of continuity after the exit of the facilitators. The remaining 15.5% (35) of the respondents were not involved in the post-implementation maintenance of the two projects.

From the awareness and involvement in the post-implementation maintenance, the study sought to establish the perceived level of beneficiary participation in the process. The study identified three indicators of the post-implementation maintenance from literature review. The indicators namely assignment of roles and responsibilities, capacity building and empowerment, and

carrying out day-to-day maintenance activities. The study translated these indicators into a set of generic statements and asked the 191 respondents who were aware and involved in the post-implementation maintenance (Table 4.4.6) to rate their perceived level of participation on a five-point Likert scale ranging from 1 to 5 as described in Section 3.7. Table 4.4.7 summarizes the respondents' perceived ratings of their participation in the established indicators.

Table 4.4.7

Rating of Perceived Participation in the Indicators of Ex-Post Maintenance

<i>Participation in:</i>	<i>Response (%)</i>					<i>IUHP</i>			<i>BiP: PUP</i>			<i>Total sample</i>		
	NP	LP	AP	HP	VHP	Mean	Std.	Dev.	Mean	Std.	Dev.	Mean	Std.	Dev.
Assignment of roles and responsibilities	3.7	15.7	24.1	14.1	42.4	4.40	1.050		3.57	1.251		3.76	1.254	
Capacity building and empowerment	8.4	12.6	18.8	23.6	36.6	4.21	1.166		3.52	1.321		3.68	1.310	
Carrying out day to day maintenance activities	12.0	16.2	15.2	35.6	20.9	3.72	1.260		3.27	1.307		3.37	1.307	
N							43			148			191	

Information in Table 4.4.7 indicate that the respondents rated the three indicators above the average score of 3.00 suggesting a perceived active participation in the assignment of roles and responsibilities, capacity building and empowerment, and carrying out day to day maintenance activities. The study attributed to this to the fact that being the primary users and consumers of the completed activities, the respondents had a high motivation to maintain them. The respondents reported that the two projects clarified specific roles and responsibilities for beneficiaries and other stakeholders in the post-implementation maintenance. For example, the training of local artisans in low-cost ABTs ensured continued maintenance of the constructed houses. The cleaning equipment donated by the IUHP to various environmental groups enabled the continued day-to-day operation beyond the project period. However, IUHP recorded higher mean scores across all the indicators compared to BiP: PUP project. As earlier observed, the direct and individual benefit from the IUHP motivated the beneficiaries to maintain the completed activities compared to the communal approach by BiP: PUP project.

The study aggregated the individual scores of all the three indicators into a CPI score. The higher the CPI score, the higher was the perceived level of participation in the post-implementation maintenance of the two projects, and vice versa. The CPI score ranged from a value of 3, indicating passive participation to 15, indicating active participation⁵. The score had a reliability coefficient of $\alpha = 0.783$ with a mean of 10.81 ± 3.23 . The study transformed the CPI score into three ordinal categories namely a score of 3-6 (low/indirect participation), 7-11 (average/consultative participation), and 12-15 (high/active participation - shared control and full control). Table 4.4.8 summarizes the respondents' overall perceived level of participation in the post-implementation maintenance of the two projects.

⁵ $3 \times 1 = 3$ (No participation)
 $3 \times 3 = 9$ (Average/moderate participation)
 $3 \times 5 = 15$ (High participation)

Table 4.4.8

Level of Perceived Participation in the Post-Implementation Maintenance

		Project		Total
		IUHP	BiP: PUP	
Level of participation	Low	3 (7.0%)	26 (17.6%)	29 (15.2%)
	Average	9 (20.9%)	52 (35.1%)	61 (31.9%)
	High/active	31 (72.1%)	70 (47.3%)	101 (52.9%)
Total		43	148	191

Information in Table 4.4.8 indicates that 72.1% (31) and 47.3% (70) of the respondents from the IUHP and BiP: PUP projects, respectively, perceived a high (active) participation in post-implementation maintenance of the two projects. The study attributed the high level of participation in IUHP to guaranteed individualized benefits, which motivated the need for maintenance of the implemented activities. A combined 52.9% (101) of the respondents recorded high (active) participation in the post-implementation maintenance with shared and full control over the preservation and maintenance of the two projects. This helped the beneficiaries to continue receiving the same benefits from the two projects over time.

The findings in Tables 4.4.5 through 4.4.8 demonstrate that more than a half (62.8%) of the sample beneficiaries was aware of the post-implementation maintenance with majority (84.5%) of them involved in the process. The beneficiaries actively participated in the post-implementation maintenance of the two projects to maintain their guaranteed benefits from the implemented interventions 15 years after completion. The study attributed this to clarity in the roles and responsibilities of the sample project beneficiaries through capacity building and empowerment. The beneficiaries were aware of who does what, when, where, and how in the maintenance of the two projects. These results support observations by Arcila (2008) and Perten (2011) in their analysis of the successes and shortcomings of participatory slum upgrading in the City of Medellin-Colombia and Villa 31 in Buenos Aires, respectively. The two studies opined that the success of beneficiary participation in maintenance depended on the choice of technology, resources, and level of skills among the beneficiaries. However, Moitra and Samajdar (1987), in a study about the evaluation of the Slum Improvement Program of Calcutta

Bustees, found out that lack of adequate awareness and preparedness of the beneficiaries about their roles and responsibilities compromise their involvement in the maintenance. As a result, Chenga et al. (2006) argued that interventionists should provide ongoing support and training after project implementation or completion to ensure that the project is successful and sustainable in the long-term.

4.4.3 Difference in Participation in the Post-Implementation across Projects

Results from sub-sections 4.4.1 and 4.4.2 summarize the awareness, involvement and perceived levels of participation of the beneficiaries in the post-implementation monitoring and evaluation, and maintenance. From these findings, the study further established whether there was a significant difference in the perceived levels of participation in the post-implementation across the projects. Thus, study operationalized objective one using the first null hypothesis, which stated that: “there was no statistically significant difference in the level of community participation in the post-implementation monitoring and evaluation, and maintenance between the two projects as perceived by the project beneficiaries.” The study used the Independent Samples t-test to determine whether there was a significant difference in the CPI mean scores of the two post-implementation stages between the two independent samples (IUHP and BiP: PUP project).

As a parametric test, the common underlying assumptions of the Independent Samples t-test included scale of measurement, independence of observations, normal distribution of the dependent variable, homogeneity (homoscedasticity) of variances, and no significant outliers in the data set. In this study, the dependent (test) variable was a continuous (interval) variable measured in the actual scores (CPI scores for the two post-implementation stages), while the independent (grouping) variable was a nominal variable (the two projects – IUHP and BiP: PUP project). The study drew observations from beneficiaries of two independent projects. The study tested for normality of the dependent variable (CPI scores) using the Q-Q Plot, which revealed a normal distribution of the mean scores for both groups (the two projects) for community participation in the two post-implementation stages. The Levene's Test for Equality of Variances given by $F = 17.496$, $p = 0.106$ for ex-post monitoring and evaluation and $F = 1.037$, $p = 0.302$ for ex-post maintenance indicate homoscedasticity of variance. Since p values are all greater than

0.05 significance level, group variances were treated as equal. Therefore, the study established non-violation of any of the assumptions, which made the Independent Samples t-test suitable to determine significant difference in the CPI means scores between the two projects at 0.01 significance level. Table 4.4.9 summarizes the output of the Independent Samples t-test.

Table 4.4.9

Comparing the CPI Score of Post-Implementation across Projects

Stage	Project	N	Mean	Std. Dev.	T	Df	Sign. (2-tailed)
Ex-post monitoring and evaluation	IUHP	49	20.88	2.713	5.426	156	0.000
	BiP: PUP	109	17.53	3.910			
Ex-post maintenance	IUHP	43	12.33	2.990	3.610	189	0.000
	BiP: PUP	148	10.36	3.175			

Table 4.4.9 indicates that the IUHP recorded a higher CPI mean score of 20.88 ± 2.713 for the post-implementation monitoring and evaluation compared to BiP: PUP, which had a mean score of 17.53 ± 3.910 . The difference in the mean score suggests that the delivery models (approaches) used by the two projects to implement their activities varied in their motivation of the beneficiaries to participate in the post-implementation monitoring and evaluation. The direct benefits to individual beneficiaries from the IUHP motivated them to track progress, assess impact, make decision and take corrective actions in the post-project period. This was in contrast with BiP: PUP project, which prioritized joint activities whose benefits took a long time to trickle down to individual beneficiaries.

Table 4.4.9 also indicates that the IUHP recorded a higher CPI mean score of 12.33 ± 2.990 for post-implementation maintenance compared to BiP: PUP, which had a mean score of 10.36 ± 3.175 . The difference in the mean score also suggests that as primary users and consumers of the implemented activities, beneficiaries were intrinsically motivated to maintain activities with guaranteed individualized benefits of the IUHP compared to joint activities with indirect benefits to individual beneficiaries from BiP: PUP project.

The study supported these differences using the t-values, namely $t(156) = 5.426$, $p(0.000) < 0.01$ significance level for post-implementation monitoring and evaluation and $t(189) = 3.610$, $p(0.000) < 0.01$ significance level for post-implementation maintenance in the two projects. Since $p(0.000) < 0.01$ significance level, the first null hypothesis is rejected suggesting that there was a statistically significant difference in the level of community participation in the post-implementation monitoring and evaluation, and maintenance between the two projects as perceived by the project beneficiaries. The study attributed to the differences in the delivery models of the activities of the two projects, which influenced intrinsic motivation to participate in the post-implementation of the two projects under review. This is because slum settlements are unique in the social, historical, economic, and political contexts and therefore the delivery model of the activities will be unique. These findings support observations by Cities Alliance (2016) that the unique social, historical, economic, and political contexts makes slums complex and heterogeneous settlements. Thus, interventions vary based on the local situation and adaptation. As a result, Hosagrahar (2013) and Hristova et al. (2015) argue that the success of development interventions depends on their compatibility the local culture. Thus, the external agencies including NGOs should acknowledge diversity in cultural heritages and values for sustainability of projects.

4.5 Assessment of Sustainability of the IUHP and BiP: PUP Projects

Objective two assessed the level of sustainability of the IUHP and BiP: PUP projects implemented 15 years ago as perceived by the project beneficiaries. To address this objective, the study determined the specific benefits from the two projects, and perceived level of sustainability by the project beneficiaries in sub-sections 4.5.1 and 4.5.2, respectively. The study operationalized the objective using the second null hypothesis, which sought to establish whether there was any significant difference in the perceived levels of sustainability between the two projects in sub-section 4.5.3. Lastly, the objective assessed measures put in place by the funding NGO to ensure the sustainability of the two projects in sub-section 4.5.4.

4.5.1 Specific Benefits of the IUHP and BiP: PUP Projects

The findings indicate that the sample project beneficiaries had lived in the project sites for a mean of 35.76 ± 13.921 years. The study considered this duration as sufficient for the respondents to

have gained adequate knowledge and experiences about the living conditions in their settlements before, during, and after the implementation and completion of the two projects. The respondents vividly recalled the multiple physical, social, economic, and environmental interventions implemented by the two projects. The interventions were not mutually exclusive and thus, majority of the respondents reported multiple benefits from the two projects. For example, a respondent could benefit from access to water, capacity building, and improved incomes from IGAs at the same time. The study summarizes the frequency of the all the reported specific benefits as illustrated in Table 4.5.1.

Table 4.5.1

Reported Specific Benefits from the IUHP and BiP: PUP Projects

Specific benefit	Project		Total Sample	
	IUHP	BiP: PUP	Frequency	%
Improved access to water	19(23.2%)	269(96.8%)	288	80.0
Improved sanitary conditions	62(75.6%)	176(63.3%)	238	66.1
Improved incomes from IGAs	37(45.1%)	136(48.9%)	173	48.1
Improved physical access and security	14(17.1%)	122(43.9%)	136	37.8
Development of business and technical skills	33(40.2%)	102(36.7%)	135	37.5
Access to credit through saving groups	28(34.1%)	60(21.6%)	88	24.4
Access to low cost housing	39(47.6%)	41(14.7%)	80	22.2
Reduction in water-borne diseases	25(30.5%)	47(16.9%)	72	20.0
Access to land	18(22.0%)	35(12.6%)	53	14.7
N	82	278	360	

Information in Table 4.5.1 shows that 23.2% (19) of the respondents from the IUHP and 96.8% (269) from BiP: PUP project benefited from improved access to safe water. The respondents from the BiP: PUP project reported that ITDG-EA in partnership with the other stakeholders rehabilitated, conserved, and protected 15 natural springs and shallow wells, and constructed three boreholes and three water and sanitation blocks. The NGO in partnership with the Sigrid Rausing Trust, and KMC facilitated the construction of three water and sanitation blocks and several water kiosks in strategic locations in the three project sites. The water kiosks sold safe and reliable

water at subsidized prices. This was in contrast to the pre-project period where the residents relied on poor quality water from polluted local rivers for domestic purposes. Plate 4.5.1 is a photo of a rehabilitated and protected natural spring in Mitume area in Tuwan project site.

For IUHP, ITDG-EA in partnership with the MCN and the International Council on Local Environment Initiatives (ICLEI) facilitated the construction of Nakuru, Rhonda, and Kaptembwo (NAROKA) community water project with several water kiosks in strategic locations in Kwa Rhonda and Kaptembwo neighbourhoods (Plate 4.5.2). The ITDG-EA and ICLEI provided financial and technical support, while the MCN provided land for the project and a direct water line to its several water kiosks to ensure constant supply. The NAROKA project was an IGA selling safe and reliable water to the residents at a subsidized price.



Plate 4.5.1: A BiP: PUP Project Protected Natural Spring in Mitume Area



Plate 4.5.2: An IUHP Community Water Project in Kaptembwo Area

The respondents noted that water kiosks sold safe and reliable water at subsidized and constant prices compared to private commercial water points whose prices were high and varied across seasons. For example, NAROKA sold a 20-litre container of water at KES 2 across all seasons compared to KES 10 to 20 charged by private water kiosks for the same quantity depending on the season. For the BiP: PUP project, there was free access to water at all times from the 15 rehabilitated, conserved, and protected natural springs and shallow wells across the three project sites. In addition, the strategically located water kiosks sold water at KES 2 for a 20-litre

container across all seasons. The respondents reported that this had saved them from private water vendors whose source of water was unknown and prices were high.

In connection with access to water, 75.6% (62) of the respondents from the IUHP and 63.3% (176) from BiP: PUP project benefited from access to improved sanitation. This included the construction of toilet facilities on residential plots and community sanitation blocks, and general cleaning of the environment. For example, for IUHP, ITDG-EA in partnership with another NGO known as UMANDE Trust facilitated the construction of public refuse transfer chambers and Bio-Centres. The most successful sanitation project was the Mwamko Mpya Youth Group Bio-Centre in Kwa Rhonda project site that included water kiosks, toilets, washrooms, urinals, and a social hall, as an IGA charging a subsidized fee (Plate 4.5.3). The Bio-Centre also recycled human waste to produce domestic energy and soil fertilizer. The IUHP and UMANDE Trust also facilitated individual landowners to construct hygienic and standard toilet facilities for their households and tenants. The NGO provided a cash reward of KES 20,000 to a property owner for each toilet constructed according to the specified sanitary condition standards, which included adequate space, ventilation, and the use of quality materials (Plate 4.5.4).



Plate 4.5.3: Mwamko Mpya Youth Bio-Centre in Kwa Rhonda Project Site



Plate 4.5.4: Ventilated Improved Toilets in Kwa Rhonda Project Site

In the BiP: PUP project, ITDG-EA in partnership with KMC facilitated the construction of water and sanitation facilities namely three bio-latrines, three ventilated improved pit (VIP) latrines, and three community-managed gender-segregated sanitation blocks. The communal ablution blocks included water-borne latrines, hot water showers, laundry facilities, and a multi-purpose social hall. The KMC provided free land and a direct water line for a constant water supply through a joint Memorandum of Understanding signed between the NGO and KMC (Okelo et al., 2008). In addition, ITDG-EA in partnership with the Sigrid Rausing Trust established a revolving fund that provided financial assistance to plot owners to construct on-plot latrines serving households, tenants, and neighbours in Shimo-La-Tewa and Tuwan project sites.

The study also established that 45.1% (37) of the respondents from the IUHP and 48.9% (136) from BiP: PUP project had improved incomes from the diverse IGAs. The respondents observed that the main aim of the two projects was to increase access to low-cost housing through the creation of IGAs. The projects provided opportunities for the development of business and technical skills, which diversified income-generating opportunities. For example, the projects trained up to 50 local artisans and 35 youth groups selected by residents in low-cost ABTs across the project sites. The projects provided free soil-pressing machines for the production of Stabilized Soil Blocks (SSBs) and lattice precast flooring systems – precast concrete beams and floor slabs. The youth groups produced and sold SSBs and lattices to various activities of the two projects and the general community. The study established that most of the trained artisans were still working as masons using the knowledge and skills gained from the two projects. For example, the study interviewed a local artisan trained by IUHP from the Kwa Rhonda project site while working as a mason in a residential area in Nakuru using the skills learnt from the project. The 65-years old male artisan narrated the role of the IUHP in improving his skills and income beyond the project period (Box 4.5.1).

Box 4.5.1: Role of the IUHP in Income Generation by Trained Artisans in Nakuru

“...I am one of the local artisans who were selected and trained in low cost ABTs by the IUHP. The training and exchange programmes improved our skills, networking and opportunities in masonry, and enhanced marketability and demand for our services. This has in turn improved our competitiveness in the market and quality of services. The income generated has enabled me to meet my financial obligations as well as invest. I have been able to buy a plot of land, constructed a residential house and educated my children from this work.”

Interview on 8th October 2019 in Kwa Rhonda project site in Nakuru

In addition, 48 women groups received business training in recycling of waste, baking, and making peanut butter, which diversified their income sources. For example, the study interviewed respondents from two women groups in the Bondeni project site of the IUHP who benefited from peanut butter processing and baking machines. The study came across one of the women groups using the machine to cook *mandazi* and *chapatti* for sale. In addition, the study established that 14 out of the 80 beneficiaries of low-cost houses in Nakuru (Table 4.5.1) prioritized commercial rental houses (Plate 4.5.5).



Plate 4.5.5: Some of the Low-Cost Rental Houses from the IUHP

Table 4.5.1 further established that 43.9% (122) of the respondents from the BiP: PUP project and 17.1% (14) from IUHP benefited from improved physical access and security inform of construction of a footbridge and improved environmental management. The respondents reported that poor surface accessibility in the pre-project period oftentimes limited their mobility and transportation within settlements and between the project sites and the Central Business District

(CBD) of Kitale. The respondents reported that in the pre-project period, the Shimo-La-Tewa project site was highly inaccessible, especially during the rainy season, due to the presence of a steep river gorge that separated it from the CBD. The ITDG-EA in partnership with other stakeholders facilitated the construction of an 80-metre footbridge across a steep river gorge. The local community contributed hardwood timber for decking the bridge, youth groups provided free unskilled labour, while women groups supplied free food to the workers. The business community supplied building materials at reduced prices. The KMC contributed 30.0% of the monetary cost of construction, while ITDG-EA covered the remaining 70.0%. An FGD with CBOs affiliated to the BiP: PUP project elaborated on the role of the footbridge as summarized in Box 4.5.2.

Box 4.5.2: FGD Excerpt on Physical Accessibility in Shimo-La-Tewa

Topic: Physical accessibility in Shimo-La-Tewa Project Site
Venue: Turkana CBO Social Hall in Kipsongo Project Site
Respondents: Officials of local CBOs affiliated to the BiP: PUP project
Size of the group: 12 **Gender:** seven male and five female **Education:** Varied levels


The following emerged about the footbridge:

Pre-project period:

- ✓ There was high physical inaccessibility because of the steep, polluted and garbage-choked river gorge separating the project site from the CBD, which limited spatial interaction and movement of goods and services, especially during the rainy season
- ✓ This was a security threat especially at night as residents crossed

Post project period:

- ✓ The construction of the bridge greatly improved physical accessibility, spatial interaction, security, access to opportunities and movement of goods and services.



FGD session held on 18th November 2019 at Turkana CBO Social Hall, Kitale

In addition, the respondents from the IUHP observed that the project sites were inaccessible during the pre-project period due to inappropriate dumping and accumulation of wastes along the roadside. The uncontrolled dumping sites and accumulated waste became a hiding place for criminals, especially at night. However, the formation of environmental groups by the IUHP enabled regular collection of garbage, recycling of wastes, and clearing of blocked drainage systems. This opened up the areas and improved physical access and security. These findings on physical accessibility in slums corroborate observations by Gouverneur (2005) in a study on planning and design for future informal settlements that slum upgrading improves mobility and accessibility to basic services.

The study also established that 24.4% (88) of the respondents had improved access to credit through saving groups. The two projects trained and encouraged residents to form and modernize their saving groups into viable and profitable entities. The members of saving groups pooled together their meagre resources by contributing as little as KES 100 per person weekly. This enabled provision of affordable credit to members to improve their well-being. The saving groups and CBOs later came together and formed an umbrella body for each project for greater mobilization of funds and better credit services. This included NAHECO for the IUHP and Kitale Affordable Housing and Environment Committee (KIHECO) for BiP: PUP project. The NAHECO and KIHECO registered and operated as SACCOs, which encouraged group and individual savings and provided a housing loan and micro-credit finance with a three-month grace period. A saving group required at least 25 members to join NAHECO or KIHECO, while individuals joined using their savings groups or buying shares as a guarantor when seeking credit.

However, the respondents observed that NAHECO collapsed a few years after the exit of ITDG-EA because of financial mismanagement and poor leadership. KIHECO, on the other hand, was still operational at the time of the study because of joint housing projects and the joint shares bought from the National Housing Corporation. Some of the saving groups affiliated with KIHECO such as Tuwan Daily Saving and Development Group (TUDADE) collapsed due to insufficient funds and mismanagement, while others such as Kisumu Ndogo Miti Moja Daraja (KIMIDA) were still active and operational.

The study indicates that 14.7% (53) of the respondents benefited from improved access to land through joint or individual buying (Table 4.5.1). The respondents observed that access to credit from the saving groups enabled them to buy plots of land, build their own houses, and start businesses. For example, the NAROKA community water project of the IUHP used its savings to buy land, subdivided it into 21 by 23 feet plots of land and distributed among its 42 members. The KIHECO bought joint land and constructed rental houses for the group. The group used the income earned and regular savings to buy a bigger parcel of land, and subdivided it into 20 by 22 feet plots and distributed among its members.

In connection with improved access to land, 22.2% (80) of the respondents benefited from access to low-cost housing. However, the respondents observed that there were certain conditions that one had to fulfill in order to benefit from the low-cost housing. These conditions included legal ownership of a plot of land, willingness to adhere to the laid down building standards and by-laws, and the ability to raise at least 60.0% of the total cost of construction. The ITDG-EA and other stakeholders provided training in low-cost ABTs, partial financing, free soil-pressing machines, and general guidance and supervision of the construction. Plate 4.5.6 shows one of the pioneer beneficiaries of low-cost housing from the IUHP in the Lake View project site. Plate 4.5.7 shows the status of the house of the same beneficiary at the time of this study.



Plate 4.5.6: An Interview with a Beneficiary of Low-Cost Housing under the IUHP



Plate 4.5.7: Status of a Project House at the Time of the Study

Lastly, the study established that 20.0% (72) of the respondents experienced a reduction in water-borne diseases. The respondents observed that the construction of improved sanitation facilities, general cleaning of the environment, and the rehabilitation and cleaning of drainage systems, contributed to a reduction in incidences of water-borne diseases. The environmental groups regularly collected garbage and cleared the drainage system. In addition, a majority of the house owners used flush toilets or VIP latrines.

4.5.2 Level of Sustainability of the IUHP and BiP: PUP Projects

After establishing the reported benefits by the project beneficiaries, the study evaluated their perceived level of sustainability of the two projects using the three dimensions proposed by Lyons et al. (2001) and Schenck and Louw (1995). The dimensions included project longevity (project sustainability), long-term impact to individual beneficiaries (personal sustainability), and long-term impact on the entire community (community sustainability). The study identified and selected two main indicators for each dimension and translated them into a set of generic statements. The sample respondents were asked to rate their perceived level of sustainability of each indicator on a five-point Likert scale ranging from 1 to 5 as described in Section 3.7. In addition, the respondents were asked to provide a justification for their rating of each indicator. The study presents the findings of the evaluation of each dimension of sustainability in the subsequent sub-sections.

4.5.2.1 Project Sustainability of the IUHP and BiP: PUP Projects

This study conceptualized project sustainability as the longevity of the IUHP and BiP: PUP projects since completion and exit of the interventionist (ITDG-EA). The study measured project sustainability using two indicators namely continued improvement in the living conditions and livelihoods, and progress in meeting the aims and objectives of the projects over the years. Table 4.5.2 summarizes the respondents' perceived rating of the level of sustainability of the two established indicators.

Table 4.5.2

Perceived Sustainability of the Indicators of Project Sustainability

	Response (%)					Project				Total	
						IUHP		BiP: PUP		sample	
	NS	LS	AS	HS	VHS	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
<i>There is continuous:</i>											
Improvement in the living conditions and livelihoods	2.5	21.4	23.3	21.4	31.4	3.79	1.394	3.51	1.139	3.58	1.206
Progress in meeting the aims and objectives of the project over years	8.6	24.7	22.5	33.1	11.1	3.39	1.245	3.06	1.129	3.13	1.163
N						82		278		360	

Information in Table 4.5.2 indicates that the respondents rated each of the two indicators above the average score of 3.00 suggesting a positive perception of their sustainability. The respondents observed that the two projects facilitated capacity building of the beneficiaries to continue and maintain the implemented interventions beyond the exit of the NGO. This encouraged ownership and responsibility among the beneficiaries. It also provided a platform and an enabling environment that encouraged the entry of other NGOs into the project sites with various complementary interventions. The new NGOs included Shelter Forum, ICLEI, Sigrid Rausing Trust, Comic Relief, and Umande Trust, Pamoja Trust, among others. This in turn enhanced the sustainability of the two projects. In addition, most of the savings groups formed continued to grow in membership, savings, and diversification of activities. The projects also encouraged active community involvement, which set the momentum for continued commitment to meeting the aims and objectives over the years

These findings demonstrate that the sample beneficiaries had a positive perception of the project sustainability of the two projects in the form of continued improvement in the living conditions and livelihoods, and progress in meeting their objectives of the two projects. The respondents were actively involved in the project sustainability and assumed ownership and responsibility of

the interventions activities and developed hard and soft skills for operation and maintenance. The initiated saving groups and IGAs created diverse employment opportunities that provided incentives for the beneficiaries to carry on. The projects enhanced human capital through capacity building and empowerment, which led to acquisition of soft and hard skills used to maintain projects in the longer term. Previous studies also observed the critical role of active involvement of beneficiaries in project sustainability of community development. For example, Khwaja (2004) in a study of development projects in Northern Pakistan attributed the high project sustainability of development projects to the involvement and commitment of the beneficiaries in the various activities of the project.

4.5.2.2 Personal Sustainability of the IUHP and BiP: PUP Projects

In this study, personal sustainability referred to the long-term positive impacts of the IUHP and BiP: PUP projects on the targeted individual beneficiaries. The study evaluated personal sustainability using two indicators namely continuous enhancement of capacity building and empowerment, and well-being of the beneficiaries over the years. Table 4.5.3 summarizes the respondents' perceived rating of the sustainability of the two indicators.

Table 4.5.3

Perceived Sustainability of the Indicators of Personal Sustainability

	NS	Response (%)				Project				Total	
		LS	AS	HS	VHS	IUHP		BiP: PUP		sample	
						Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
<i>There is continuous:</i>											
Enhancement of capacity building and empowerment	10.0	25.3	25.3	23.9	15.6	3.27	1.441	3.05	1.156	3.10	1.228
Enhancement of the well-being	8.3	26.9	31.9	21.1	11.7	3.29	1.181	2.92	1.107	3.01	1.133
N						82		278		360	

Information in Table 4.5.3 indicates that the respondents rated the two indicators above the average score of 3.00 suggesting a positive perception of their sustainability. The respondents reported that the two projects enhanced their skills, introduced a saving culture, and diversified income-generating opportunities. The ITDG-EA in partnership with Techno Serve, a business-related NGO, offered technical and business training in simple bookkeeping, basic financial management, and the formation of saving groups. The respondents observed that the business and technical knowledge received continued being relevant, valuable, and applicable 15 years after completion of the two projects. A 56 years old respondent, operating a retail shop in the Kipsongo project site observed that:

“I started this shop in the year 2004 using credit from my saving group affiliated to the BiP: PUP project and basic business training offered by the project. The high returns from the business have changed my life for the better. I can now comfortably meet the basic needs of my family and dependents.”

The savings groups formed increased access to affordable credit for investment. For example, a 38 years old respondent from Twaweza Youth Group in the Bondeni project site reported that

“the group used its savings to buy a 5-acre piece of land in Lanet – a peri-urban area of Nakuru. The group subdivided the land among its 48 members for the construction of individual residential houses. The group also used the trainings and savings to invest in carpentry, waste recycling, juice making, and urban farming.”

The findings indicate that the sample beneficiaries had a positive perception of the personal sustainability of the two projects in terms continued improvement in capacity building, empowerment and well-being. The two projects facilitated personal development through capacity building, skills training, access to credit, and expanded IGA opportunities. This improved well-being, self-confidence, and soft skills of the beneficiaries, which necessitated sustainability. Previous studies also observed the high personal sustainability and attributed it to enhanced personal development and benefits. For example, a study by Chenga et al. (2006) on the critical factors for sustainable social projects, and another study by Sibiyia (2010) on community participation trends in the rural development process. The two studies observed that

the soft and hard skills gained from slum upgrading empower beneficiaries and build their self-reliance, which was critical for the sustainability of the projects.

4.5.2.3 Community Sustainability of the IUHP and BiP: PUP Projects

The study conceptualized community sustainability as the long-term positive impacts of the IUHP and BiP: PUP projects on the entire community through the empowerment of members and harnessing the momentum for future development initiatives. The study measured community sustainability using two indicators namely enhancement of momentum for future improvement, and enhancement of social capital. Table 4.5.4 summarizes the respondents' perceived rating of the sustainability of the two indicators.

Table 4.5.4

Perceived Sustainability of the Indicators of Community Sustainability

	Response (%)					Project						
						IUHP		BiP: PUP		Total sample		
	NS	LS	AS	HS	VH S	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	
<i>There is continuous:</i>												
Enhancement of momentum for future improvement	2.8	21.7	24.7	21.7	29.2	3.71	1.418	3.47	1.123	3.53	1.199	
Enhancement of social capital	7.2	25.3	23.5	33.9	10.0	3.35	1.201	3.08	1.095	3.14	1.124	
N						82		278		360		

Information in Table 4.5.4 indicates that the respondents rated the two indicators above the average score of 3.00 suggesting a positive perception of their sustainability. The respondents reported that the two projects empowered the local communities with skills and knowledge, which formed a basis for harnessing the momentum for future development and improvement. The projects created several employment opportunities and enhanced social capital, which the local communities used to mobilize members for collective action.

The findings suggests that the sample beneficiaries had a positive perception of the community sustainability of the two projects in terms of enhanced social capital and continued empowerment of the local community in harnessing the momentum and taking charge of future development. Thus, the two projects empowered the local communities and provided a platform to venture into future development initiatives through strengthening of social networks. These findings corroborate observations in previous studies that sustained slum upgrading empowers and increases the capability of a community to address its own needs (Picciotto, 2002). The associated social networks allow residents to pool resources, share information, and develop skills and networks to address the challenges of social exclusion (Landaeta, 2004; Schilderman, 2004). As a result, there was a positive correlation between social capital and household welfare in slums (ID21, 2000) with most job opportunities among the urban poor in Peru coming from social networks developed through slum upgrading (ITDG-EA, 2001).

4.5.2.4 Overall Sustainability of the IUHP and BiP: PUP Projects

The study aggregated the individual scores of all the six indicators of the three dimensions (Tables 4.5.2 thru 4.5.4) into a sustainability index score. The higher the index score, the higher was the perceived level of sustainability of the two projects, and vice versa. The index score ranged from a value of 6 indicating very low sustainability to 30, indicating very high sustainability⁶. The index score had a reliability coefficient of $\alpha = 0.889$ with a mean of 19.49 ± 5.655 . The study transformed the index score into four ordinal categories namely a score of 6 (no sustainability), a score of 7-14 (low sustainability), a score of 15-22 (average sustainability), and a score of 23-30 (high sustainability). Table 4.5.5 summarizes the overall perceived level of sustainability of the two projects.

⁶ $6 \times 1 = 6$ (No sustainability)
 $6 \times 3 = 18$ (Average/moderate sustainability)
 $6 \times 5 = 30$ (High sustainability)

Table 4.5.5

Overall Perceived Level of Sustainability of the Study Projects

		Project		Total
		IUHP	BiP: PUP	
Level of sustainability	No	1 (1.2%)	0 (0.0%)	1 (0.3%)
	Low	18 (22.0%)	65 (23.4%)	83 (23.1%)
	Average	21 (25.6%)	115 (41.4%)	136 (37.8%)
	High	42 (51.2%)	98 (35.3%)	140 (38.9%)
Total		82	278	360

Information in Table 4.5.5 indicates that 51.2% (42) of the respondents from the IUHP and 35.3% (98) from BiP: PUP project perceived a high level of sustainability. The study established that the individual model used by the IUHP encouraged ownership, responsibility and commitment to sustainability of the interventions due to guaranteed direct and individual benefits. The communal model used by the BiP: PUP project took a long time for the benefits to trickle down to individual respondents, which limited the perceived sustainability of the interventions. A combined 76.7% (276) of the respondents had a positive perception of the sustainability of the two projects, including 37.8% with “average sustainability” and 38.9% with “high sustainability.”

In summary, the beneficiaries had a positive perception of the overall sustainability of the two projects 15 years after completion and exit of the funding NGO. The study attributed the positive perception to ownership, responsibility, and active involvement of the beneficiaries in the life cycle of the two projects. However, these results contradict observations by Brinkerhoff and Goldsmith (1992) in a study about promoting the sustainability of development interventions. The study observed that a majority of the development interventions in developing countries record of low sustainability with limited positive impact after the withdrawal of the government or external assistance. The study attributed the contradiction in results to the role that the IUHP and BiP: PUP projects played in promoting IGAs and strengthening of local CBOs for active participation, ownership, responsibility, and sustainability.

4.5.3 Difference in the Sustainability of the IUHP and BiP: PUP Projects

Results from sub-sections 4.5.1 and 4.5.2 summarize the specific benefits from the two projects and their perceived level of sustainability 15 years after implementation. From these findings, the study further established whether there was a significant difference in the perceived levels of sustainability across the projects. Thus, the study operationalized objective two using the second null hypothesis, which stated, “there was no statistically significant difference in the level of sustainability of slum upgrading between the two projects as perceived by the project beneficiaries.” The study used the Independent Samples t-test to establish whether there was a significant difference in the sustainability index scores between the two independent samples (IUHP and BiP: PUP project).

As a parametric test, the common underlying assumptions of the Independent Samples t-test included scale of measurement, independence of observations, normal distribution of the dependent variable, homogeneity (homoscedasticity) of variances, and no significant outliers in the data set. In this study, the dependent (test) variable was a continuous (interval) variable measured in the actual scores (sustainability index score), while the independent (grouping) variable was a nominal variable (the two projects – IUHP and BiP: PUP project). The study drew observations from beneficiaries of two independent projects. The study tested for normality of the dependent variable (sustainability index score) using the Q-Q Plot, which revealed a normal distribution of the mean scores for both groups (the two projects). The Levene's Test for Equality of Variances given by $F = 12.882$, $p = 0.216$ indicated homoscedasticity of variance. Since p value (0.216) was greater than 0.05 significance level, the study treated the group variances as equal. Therefore, the study established non-violation of any of the assumptions, which made the Independent Samples t-test suitable to determine significant difference in the sustainability index scores between the two projects at 0.05 significance level. Table 4.5.6 summarizes the output of the Independent Samples t-test.

Table 4.5.6

Comparing the Sustainability Index Score across Projects

Project	N	Sustainability index mean	Std. Dev.	T	df	Sign. (2-tailed)
IUHP	82	20.80	6.593	2.419	358	0.016
BiP: PUP	278	19.10	5.298			

Information in Table 4.5.6 indicates that the IUHP recorded a higher sustainability index mean score of 20.80 ± 6.593 compared to BiP: PUP mean score of 19.10 ± 5.298 . The small difference in the mean score underscores the influence of the delivery model in implementation of on sustainability. Project beneficiaries were more likely to be motivated to continue and maintain projects whose interventions with direct and individual benefits. This influences ownership and responsibility of the post-implementation period and sustainability of the interventions.

The difference in the sustainability index mean score was supported by the t-value of $t(358) = 2.419$, $p(0.016) < 0.05$ significance level. Since $p(0.016) < 0.05$ significance level, the second null hypothesis is rejected suggesting that there was a statistically significant difference in the level of sustainability of slum upgrading between the two projects as perceived by the project beneficiaries. The study attributed to the differences to the fact that slum settlements are unique in the social, historical, economic, and political contexts and therefore similar interventions will have different outcomes depending on the local context of the slum settlement. These findings support observations by Cities Alliance (2016, 2021a) that slum upgrading is a spatially localized action that requires tailored solutions to specific problems. Thus, each slum is a complex and heterogeneous settlement with unique social, historical, economic, and political contexts makes slums are complex and heterogeneous settlements. As a result, interventions vary based on the local situation and adaptation. As a result, Hosagrahar (2013) and Hristova et al. (2015) argues that the success of development interventions depends on their compatibility the local culture. Thus, the external agencies including NGOs should acknowledge diversity in cultural heritages and values for sustainability of projects.

4.5.4 Measures for Sustainability of the IUHP and BiP: PUP Projects

Section 4.5.2 indicates that the project beneficiaries perceived the IUHP and BiP: PUP projects to have been sustainable 15 years after completion (see Table 4.5.2 thru 4.5.5). The study further sought to establish the measures put in place by the two projects to ensure the sustainability of their interventions and challenges encountered in the process. Table 4.5.7 summarizes their responses.

Table 4.5.7

Measures for Sustainability of the IUHP and BiP: PUP Projects

Measures	Project		Total
	IUHP	BiP: PUP	
Formation of management committees	40 (48.8%)	126 (45.3%)	166 (46.1%)
Enhanced capacity building	25 (30.5%)	110 (39.6%)	135 (37.5%)
Individual responsibility	17 (20.7%)	42 (15.1%)	59 (16.4%)
Total	82	278	360

Information from Table 4.5.6 indicates that 46.1% (166) of the respondents reported formation of management committees to govern the post-implementation stages. Most of the joint activities had a management committee, council of trustees, and general committee. The committees were answerable to a joint beneficiary meeting for decision-making. The committees had regular reporting schedules, which included monthly, quarterly, semi-annual and annual reports. For example, the NAROKA Community Water Project of the IUHP had a monitoring and evaluation committee with time schedules for meeting and reporting of their findings. The Tuwan Water and Sanitation Service Group of the BiP: PUP project had a management committee with a Chairman, Secretary, and Treasurer running the project and coordinating post-implementation stages.

In connection with the management committees, 37.5% (135) of the respondents enhanced their capacity building through various training, seminars, and exchange programmes within and outside the country. The projects trained the respondents on day-to-day maintenance practices in

the post-project period such as operating and use of SSB machines, repairs of natural springs, and bookkeeping. For example, ITDG-EA facilitated an exchange programme on the maintenance of low-cost housing in Huruma in Nairobi City and Manyatta in Kisumu town. Local artisans and youth received technical training in low-cost ABTs. These findings on the importance of capacity building in the post-implementation maintenance corroborate previous studies. For example, UN-Habitat (2014) observed that the Luanda Urban Poverty Programme in Angola trained management committees on the maintenance of standpipes, basic management, conflict-resolution, and bookkeeping skills.

In addition to the committees and capacity building, 16.4% (59) of the respondents reported that the two projects encouraged beneficiaries to assume individual responsibility in the post-project periods. This was especially the case for the post-implementation maintenance of the interventions of the two projects. For example, the respondents reported that continued maintenance and improvement of the low-cost houses and repair of sources of water was an individual responsibility of the specific beneficiaries. The respondents observed that ITDG-EA provided a financial token of KES 8,000 to beneficiaries of the low-cost housing from the IUHP to take care of the post-implementation maintenance of the constructed houses. However, from field observations, the level of post-implementation maintenance varied depending on the financial ability of an individual. Plate 4.5.8 and Plate 4.5.9 show the status of two low-cost project houses supported by ITDG-EA in Lake View project site of the IUHP. Although constructed during the same period, the two houses varied in their status of maintenance because of the differences in the socio-economic characteristics of the beneficiaries.



Plate 4.5.8: A Poorly Maintained Low-Cost House in Lake View Project Site



Plate 4.5.9: A Well-Maintained Low-Cost House in Lake View Project Site

Despite the above measures, the respondents reported that the two projects encountered several challenges, which compromised sustainability of their interventions. The 360 sample beneficiaries summarized these challenges in Table 4.5.8.

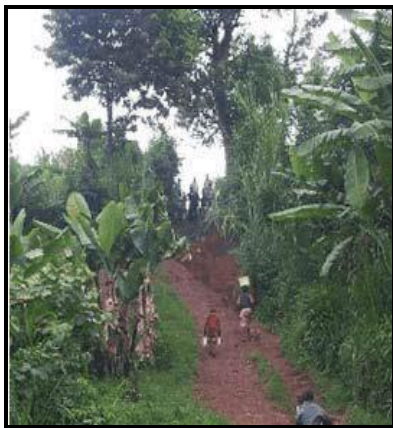
Table 4.5.8

Challenges of Sustainability of the IUHP and BiP: PUP Projects

Challenge	Project		Total
	IUHP	BiP: PUP	
Financial limitations	36 (43.9%)	121(43.5%)	157 (43.6%)
Elite capture	11 (13.4%)	56(20.1%)	67 (18.6%)
Weak public-private partnership	14 (17.1%)	34 (12.2%)	48 (13.3%)
Political interference	10 (12.2%)	35 (12.6%)	45 (12.5%)
Negative cultural influence	11 (13.4%)	32 (11.5%)	43 (11.9%)
N	82	278	360

Information in Table 4.5.8 indicates that 43.6% of the sample project beneficiaries cited financial limitations as the major challenge to the sustainability of slum upgrading interventions after the exit of the funding NGO. The respondents attributed this to high levels of poverty and overdependence of the targeted beneficiaries on the NGO for financial and technical support.

This challenge mostly affected the physical infrastructure such as water projects and low-cost housing put in place by the NGO but without sufficient financial resources for their post-implementation maintenance and repairs. Yet other interventions such as the footbridge in Shimo-La-Tewa project site were in a deplorable state even though it needed minimum repairs and financial resources. This suggests that the poor status of such interventions was due to beneficiaries' negligence and high overdependence of the sample beneficiaries for financial and technical support from the NGO rather than lack of resources. Field observations confirmed that the dilapidated footbridge required minor repairs. Plate 4.5.10 shows the state of the footbridge before the project, after the project, and at the time of the study (15 years later). In addition, there was a defunct fishpond (Plate 4.5.11) and biogas plant (Plate 4.5.12) in the Tuwan project site of the BiP: PUP project due to lack of finance after the exit of ITDG-EA.



Before Construction



Bridge

After completion of the bridge



Status of the bridge 15 years

Plate 4.5.10: Changing State of the Footbridge in Shimo-La-Tewa Project Site



Plate 4.5.11: Abandoned Fish Pond in Tuwan Project Site



Plate 4.5.12: A Stalled Biogas Plant Project in Tuwan Project Site.

The IUHP also faced financial limitations after the exit of ITDG-EA. Field observations established that some of the soil-pressing SSB machines donated by the IUHP had broken down and abandoned, despite requiring only minor repairs (see Plate 4.5.13).



Plate 4.5.13: Broken-Down SSB Machine in Kwa Rhonda Project Site

The Project Manager from the implementing NGO (ITDG-EA) elaborated on the financial limitations that the NGO faced in actualizing the post-implementation stages and sustainability of the two projects by observing that:

“we had fixed budgets and timelines for the two projects running from initiation to completion. The NGO expected the residents to gradually take full control, ownership, and responsibility for the activities in the post-project period. However, many of the activities have been left unattended after our exit” (Personal Communication with the Project Manager in Nakuru, November 17, 2019).

The Project Manager attributed this situation to the low income levels of project beneficiaries, which limited their financial and technical ability to undertake maintenance of majority of the interventions. The NGO’s lack of sufficient financial resources limited the spatial reach of the interventions as well as to replicate and to scale them up within the selected slum neighbourhoods and beyond. For example, although the project sites had a high housing deficiency, the NGO could only manage to facilitate a few residents who had legal ownership of land, adhered to construction standards and by-laws, and were able to raise at least 60.0% of the total cost of construction. In addition, the limited financial resources contributed to the relocation of the NGO offices from the two towns to the main office in Nairobi, which greatly compromised the sustainability of the two projects.

An FGD with the local CBOs conducted in Turkana CBO Social Hall in the Kipsongo project site further illustrated the challenge of financial limitations in post-implementation maintenance of the physical projects such as the footbridge, fishpond, and biogas plant. Box 4.5.3 is an excerpt from the FGD summarizing the extent to which financial limitations affected the maintenance of the footbridge, fishpond, and biogas plant.

Box 4.5.3: Financial Limitations for Post-Implementation Maintenance of a Footbridge

Topic: Post-Implementation Maintenance of the BiP: PUP project

Venue: Turkana CBO Hall in Kipsongo Project Site of the BiP: PUP Project

Respondents: Officials of local CBOs affiliated to the BiP: PUP project

Size of the group: 12 **Gender:** seven male and five female **Education:** Varied levels

The following emerged about ex-post maintenance of the BiP: PUP project:

- ✓ The project did not programme for financial resources needed for post-implementation maintenance of the footbridge in Shimo La Tewa
- ✓ Because of lack of finances, the local community disassociated itself from the physically dilapidated footbridge and referred to it as “theirs” (belonging to ITDG-EA) than “ours” (belonging to the community).
- ✓ There was the construction of a fishpond and a biogas plant in Tuwan area. However, maintenance became a challenge after the exit of ITDG-EA due to financial limitations.
- ✓ Some contemplated selling the equipment of the biogas plant and renting out the defunct fishpond to private individuals

FGD session held on 18th November 2019 at Turkana CBO Hall in Kipsongo area of Kitale

The findings suggest that NGO-driven slum upgrading efforts suffer from lack of sufficient financial resources and support to ensure the sustainability of the implemented interventions. Lack of financial support to support for follow-up activities in the post-project period adversely affected the ability of the two projects to achieve sustainability and expected long-term impact. NGOs operate on fixed budgets and timelines, which largely cover all stages up to the implementation of the projects. The written or un-written expectation is that the project beneficiaries will assume responsibility for the post-implementation stages and in that way contribute towards the sustainability of the projects. However, beneficiaries often fail to take full control, ownership, and responsibility for the post-implementation stages because of their high level of poverty and over-dependence on NGOs for financial and technical support. These findings were consistent with conclusions from previous studies such as Barnes et al. (2014), Ndou (2012), and Wasilwa (2015) who observed that scarcity of resources limits replicability, self-sustainability, and scalability of the NGO-driven interventions to match the needs of the

ever-expanding slums. As a result, while many NGOs pursue low-cost, small-scale, and innovative programs, they tend to be under-financed, poor quality, insignificant, temporary, and unsustainable (Annis, 1987). For example, financial limitations contributed to the deterioration and abandonment of water wells and pumps in Yombo Dovyva and Tungi settlements in Dar es Salaam (Kyessi, 2005).

Elite capture was the second major challenge facing the two projects. Elite capture refers to a situation in which a few individuals with privileged social, economic, educational or political advantages manipulate the decision-making process of a development project for personal interest and benefits at the expense of the large group (Musgrave & Wong, 2016). In the study, 18.6% of the sample project beneficiaries reported that a clique of a few self-seeking local elites took advantage of the freedom that ITDG-EA granted them through local CBOs to dominate and manipulate decision-making processes to their personal advantage at the expense of the local community. The elites included certain community leaders, opinion leaders, leaders of CBOs, and elected representatives. The Project Manager supported these views by observing that:

“our entry point into the project sites in the two secondary cities involved identification and working with local community leaders and opinion leaders through existing local CBOs as a strategy to actively involve the local community in decision making and needs assessment. However, we came to discover later at the implementation stages that these groups manipulated processes and prioritized their own interests and position themselves as first-line beneficiaries in many of the activities. Majority unfairly benefited from capacity building and empowerment programmes at the expense of other more deserving members of the community” (Personal Communication with the Project Manager in Nakuru, November; 17, 2019).

However, the same local elites dominated the leadership of the CBOs and deliberately controlled and manipulated information channels between NGO and local community. As a result, the leaders became first-line beneficiaries of key interventions of the two projects at the expense of other deserving community members. The benefits included unfair access to low-cost housing, water projects, established IGAs and savings groups, as well as training and skills development opportunities. Field observations confirmed the reality that majority of the beneficiaries of these

projects' low-cost housing were officials of the CBOs and residents with comparatively more resources to meet the financial obligations of the projects.

The findings demonstrate that the high social, economic, and political power imbalances in slums enable local elites to use NGO-driven community development processes for personal goals at the expense of the wider community. Moreover, local elites use their privileged position to dominate local community organizations and to position themselves as intermediaries between NGOs and local communities in order to manage information flows in ways that benefit them. This compromises the sustainability of the NGO-sponsored slum upgrading interventions because local elites use their comparative resource, knowledge, influence, and network advantages to benefit themselves disproportionately (Madajewicz et al., 2014; UN-Habitat, 2020). This situation arises because of the absence of strong and independent local organizations, which can help to ensure the sustainability of NGO projects (Madajewicz et al., 2014; Rigon, 2014). The two projects under review unsuccessfully attempted to minimize the danger of elite capture by collaborating and working with local CBOs. In the end, they failed because local elites found ways of dominating local CBOs (Majale, 2008).

Weak public-private partnership (PPP) was another challenge to sustainability of the interventions of the two projects. There was lack of coordination and harmony in the implementation and sustainability of slum upgrading interventions in the two secondary cities. The views of the Project Manager and 13.3% of the sample beneficiaries (Table 4.5.8) show this anomaly, suggesting that ITDG-EA, local authorities, and other stakeholders independently implemented disjointed, isolated, unsustainable, and competing interventions in the project sites with limited or no collaboration and consultation. Respondents in an FGD in Nakuru provided details showing overlap and lack of coordination in slum reduction efforts. The discussants noted that the central government implemented the KISIP in 2011 in Nakuru, eight years after the completion of the IUHP and exit of ITDG-EA. The KISIP implemented a variety of interventions such as the renovation of drainage and sewerage systems, street lighting, and solid waste management implemented in selected slum settlements, including the three IUHP project sites. However, the respondents observed that there was no effort on the part of the KISIP and the MCN to consult, continue or complement similar or related interventions undertaken by the

IUHP. The respondents reported further that they made several approaches to MCN to explore ways in which some of the activities of the KISIP could serve to supplement and complement efforts by the IUHP to no avail. As one respondent in the FGD noted:

“we thought that since the MCN was aware of the various interventions implemented by the IUHP, especially in low-cost housing, we should have been among the first beneficiaries of sewerage connection to individual houses under KISIP. However, nobody bothered with us, and instead, we were informed that the two projects were different, with separate criteria of choosing beneficiaries” (FGD Session at Bondeni Primary School, October; 8, 2019).

The respondents from the FGD and semi-structured questionnaire suggested that there was need for an integrated approach to slum upgrading among the various actors in the study area. If this could have happened, it would have facilitated collaboration of the KISIP with the IUHP and other stakeholders in renovation of the drainage and sewerage systems or in connecting the beneficiaries of low-cost housing from the project to the new drainage system. To further illustrate this challenge, respondents from a local CBO in Nakuru known as Daima Usafi Self Help Group from the Lake View project site reported that the MCN seized a lorry that was donated to them by the IUHP on the pretext of non-payment of taxes to the local authority after the exit of the NGO. On their part, the Project Manager and respondents from an FGD in Kitale reported that KMC unilaterally changed the intended usage of some of the interventions by the BiP: PUP project. For instance, KMC seized and changed the purpose of two social halls belonging to the BiP: PUP project (formerly Mitume Community Social Hall) into a government administration office and dispensary. This was in violation of a joint Memorandum of Understanding signed between the NGO and KMC (Okelo et al., 2008). The respondents observed that although a dispensary and administration office were also critical services in their settlement; there should have been consultation between the NGO and KMC before the local authority made its decision. Because of the prevailing unilateral and disjointed approach to service delivery, duplication of the interventions and competition among the various stakeholders rather than complementarity had become a common place.

The findings have also revealed a lack of a clear and robust PPP in the post-implementation stages of slum upgrading. The sustainability of slum upgrading depends on an all-encompassing partnership among key stakeholders to supplement and complement each other, especially in the post-project period. This requires vibrant non-state actors alongside a capable and authoritative local urban authority to provide a conducive and enabling environment for the sustainability of the interventions. However, the observed level of negligence of some of the interventions of the two projects after the exit of the NGO indicates a failure by the local urban authorities, as state agencies, to protect, maintain and oversee the sustainability of the planned efforts. This failure contributed to the many independent, disjointed, isolated, unsustainable, and competing interventions by various actors with limited or no collaboration and consultations. These results emphasize the importance of strong PPPs in slum upgrading with local urban authorities playing a critical role in creating an enabling environment for the sustainability of the interventions implemented by other actors such as NGOs.

These findings corroborate previous observations that underscore the perception that strong PPPs minimize needless competition and duplication, and instead promote the diffusion of best practices in the delivery of services (Muraguri, 2011; Sharifzadegam, 2011). This requires an interdependent and adaptable relationship between private and public sectors to augment their respective strengths and overcome their weaknesses (Phang, 2009; World Bank et al., 2014; Ysa, 2007). The public sector, through local authorities, should implement policies and interventions that complement, coordinate and collaborate with non-state actors, rather than compete with them. However, other studies have identified a lack of adequate support from the local authorities as the weakest link in supporting strong PPPs (Post & Mwangi, 2009; UN-Habitat, 2016). According to the Global Platform for Sustainable Cities (2020), local authorities suffer from ineffective governance, lack of political will, limited budgets, and poor communication with the public and other actors.

Information in Table 4.5.8 indicates that 12.5% of the sample project beneficiaries reported that political interference after the exit of the NGO compromised the sustainability of the two projects. They observed that some local politicians were uncomfortable and apprehensive of the influence of the NGO in empowering and building the capacity of the local community. The

respondents observed that politicians erroneously perceived the success of the slum upgrading initiatives as a threat to their political future instead of being ashamed of their inability to provide basic services in the project sites. The respondents further reported that the politicians' negative perceptions of these projects was attributed to an erroneous feeling that the NGOs were using slum upgrading to manipulate the local communities and to undermine local political leaders. Moreover, the politicians were also afraid that enhanced community empowerment by NGOs could change the local power balance and jeopardize their positions.

For example, the respondents from an FGD with local CBOs in Nakuru alleged that a local politician closed down some of the IUHP refuse transfer chambers on the pretext that they were on public land. This was despite the fact that the closed refuse transfer chambers were built on land donated by the MCN to support the IUHP interventions. Further, respondents from a local CBO in Nakuru known as Daima Usafi Self Help Group noted that the MCN seized a lorry donated to them on the pretext of non-payment of taxes to the local authority after the exit of the NGO. Plate 4.5.14 shows one of the defunct refuse transfer chambers in the Lake View project site of the IUHP closed by a local politician claiming it was located on public land. Captured in the Plate is a local village elder and a beneficiary of the IUHP explained the closure of one of the defunct refuse transfer chambers to the research team.



Plate 4.5.14: A Defunct Refuse Transfer Chamber in Lake View Project Site

In Kitale, the respondents in the FGD with local CBOs affiliated to the BiP: PUP project revealed that ITDG-EA had an agreement with KMC in their partnership to improve access to water and sanitation in selected settlements. In the partnership, KMC allocated a 5-acre piece of land for the construction of Tuwan Water and Sanitation Service Group. However, following the exit of the NGO, and the change of governance structure from the centralized system to devolved system, the Trans Nzoia County Government reneged on the agreement and showed signs of wanting to repossess the land on the pretext of irregular allocation. At the time of the study, the Trans Nzoia County Government had written to the BiP: PUP project about the intention of reallocating at least two acres of project land for other uses. In addition, local politicians and the County Government had taken over and changed the usage of two project social halls in the Tuwan project site. They converted a social hall named Mitume Community Development Project into a government administration office (Chief's Office) (Plate 4.5.15), and another one into a local dispensary in Mitume village.



Plate 4.5.15: Mitume Community Social Hall Project Converted into a Chief's Office

The study findings demonstrate that urban settlements operate within the jurisdiction of a devolved governance system in the form of local authorities, which are essentially political in structure and nature. This is especially for slum and informal settlements, which are vulnerable and located in urban neighbourhoods that tend to be highly politicized. The success of any slum upgrading depends on the political commitment and sensitivity to needs and issues of slum dwellers. Thus, the presence or absence of local political will, support, and commitment are important determinants of the sustainability of slum upgrading projects. This is especially true of projects by non-state actors such as NGOs whose effectiveness and efficiency depend on the ability of the state to design and implement policies that create an enabling environment for their effective operation. The state policy-making function is ordinarily a political process with vested local political interests and outcomes. These sentiments are in agreement with observations from previous studies, which show that effective slum upgrading and the sustainability of the same requires strong political will and commitment by local urban authorities (Acioly, 2007). Lack of

political will not only hinders the creation of a necessary supportive policy environment (Imparato & Ruster, 2003), it also slows down decision-making (Ndukui, 2013) more in Africa where governments and politicians often harbour negative perceptions and attitudes towards NGOs (Bratton, 1994; Gyamfi, 2010). In some cases, governments and politicians suspect NGOs of being partisan and harbouring ulterior political agendas camouflaged as development interventions thereby at times, leading to the deregistration or restriction of NGOs and their activities (Gyamfi, 2010; Otiso, 2003).

Finally, negative influence of culture and traditions was another challenge to sustainability of the two projects. The Project Manager and 11.9% of the respondents reported the role of cultural influence and rigidity among beneficiaries on sustainability of the two projects. The respondents cited a case where the ITDF-EA facilitated some of the beneficiaries to attend a training on solid waste management in Uganda. The training focused on the recycling of domestic waste using a composting toilet known as Urine Diversion Dehydration Toilet (UDDT) to produce soil fertilizer. After the training, the NGO facilitated the adoption of the technology in the project sites back in Kenya. However, although the technology had succeeded in Uganda, the targeted beneficiaries openly rejected it citing non-conformity with local cultural beliefs and social norms. This was despite the poor sanitary conditions in the project sites. There was a stigma in handling and recycling human waste and using it as a soil fertilizer. Plate 4.5.16 shows one of the abandoned UDDT in the Lake View project site of the IUHP because of cultural influence.



Plate 4.5.16: Abandoned UDDT in Lake View Project Site

A 74-years old man beneficiary of UDDT from the Kwa Rhonda project site of the IUHP made observations recorded in Box 4.5.4:

Box 4.5.4: Influence of Culture on Adoption of UDDT in Kwa Rhonda Project Site

“I am one the 15 beneficiaries who attended a training on solid waste management using UDDT in Uganda facilitated by ITDG-EA. During the training, we visited successful banana farming using fertilizer derived from recycled human waste through UDDT. After the training, ITDG-EA facilitated us to pilot the farming technology in Kenya. Personally, I constructed these two UDDTs (see Plate below) for my household and tenants. However, the technology received a lot of resistance in Nakuru because of rigid local culture and lack of understanding. Upon realizing that the technology will recycle human waste, all my tenants vacated their houses. In addition, all my long-time farm produce customers ran away after realizing that I was using the recycled human waste as fertilizer. They claimed that by products were contaminated and unsafe for human consumption.”



A beneficiary standing next to his abandoned UDDT and explaining the technology to the

Therefore, although the technology had registered success in Uganda, the targeted beneficiaries resisted it because of non-conformity with the social and cultural values. Field observations confirmed the presence of abandoned and unutilized UDDTs in the project sites.

The findings illustrate that slum settlements operate in social, historical, economic, and political contexts. This requires uniquely suited interventions with tailored solutions to specific problems within local contexts. Interventionists are thus required to understand and align their planned slum upgrading to the social, cultural, and economic contexts in specific slum areas. There cannot be “fit-for-all-situations solutions” to slum upgrading in diverse geographical and socio-

economic settings. Any new technology, programme, policy, or approach introduced should thus be compatible with and in conformity with the known and prevailing social and cultural norms and aspirations of the local community. Understanding and articulating these dimensions in slum project interventions will persuade and encourage the targeted beneficiaries to help ensure the effectiveness and sustainability of local slum upgrading projects. This reality support previous research findings that slums are complex and heterogeneous settlement, which require site-specific interventions based on equally unique, complex and heterogeneous local situations (Cities Alliance, 2016). Moreover, the sustainability of any slum development intervention requires the recognition of and respect for diverse local cultural heritages and values (Hosagrahar, 2013; Hristova et al., 2015).

4.6 Post-Implementation and Sustainability of the IUHP and BiP: PUP Projects

Objective three of this study sought to determine the influence of community participation in the post-implementation monitoring and evaluation, and maintenance on sustainability of the IUHP and BiP: PUP projects through the perceptions of project beneficiaries. The study operationalized the objective using the third null hypothesis, which stated that: “community participation in the post-implementation monitoring and evaluation, and maintenance had statistically significant influence on sustainability of the two projects as perceived by the project beneficiaries.” From the literature review and conceptual framework, community participation in the post-implementation monitoring and evaluation, and post-implementation maintenance were the independent variables, while sustainability was the dependent variable. Community participation in the post-implementation stages has a significant and positive influence on sustainability of slum upgrading. The study measured community participation in the two post-implementation stages (see section 4.4) and sustainability of the two projects (see section 4.5) as composite index scores (continuous variables). As a result, the study used the Pearson’s Product Moment Correlation Coefficient (r) and the multiple regression (r^2) to determine the relationship between the two variables.

Before using the two parametric tests, that is, the Correlation Coefficient (r) and the multiple regression (r^2), the study tested the underlying assumptions/conditions including linearity, no

autocorrelation (independence), homoscedasticity, normality and no multicollinearity. The study tested the linear relationship between the independent and dependent variables using a scatter plot depicting each independent variables against the dependent variable. In the two cases, a straight line passed through the plotted points rising from left to right upwards suggesting a positive linear relationship. To test for no autocorrelations (independence of consecutive residuals), the study used a Durbin-Watson test whose value was 1.629 suggesting no autocorrelation. For homoscedasticity (residuals having constant/equal variance along the values of the dependent variable), the study used a scatter plot of the residuals against the dependent variable. From the plotted regression line, there were constant deviations of the residual suggesting homoscedasticity. For the normality of the residuals, the study used the quantile-quantile (Q-Q) plot, which depicted the plotted residuals forming a straight diagonal line rising from left to right suggesting a normal distribution. Lastly, the study tested for multicollinearity (correlation between independent variables) using the Variance Inflation Factor (VIF) whose value was found to be 1.900, which was less than 5, suggesting no multicollinearity of the variables. The above tests indicate non-violation of any of the assumptions of Correlation Coefficient and the multiple regression.

The study used the Correlation Coefficient to determine the strength and direction of the relationship between the independent variables and the dependent variable. Table 4.6.1 summarizes the correlation coefficient matrix of community participation in the two post-implementation stages and sustainability of the IUHP and BiP: PUP projects.

Table 4.6.1

Correlation of Participation in Post-Implementation and Sustainability

		Sustainability index score	CPI score for ex- post monitoring and evaluation	CPI score for ex-post maintenance
Sustainability index score	<i>r</i> Sig. (2-tailed) N	1 360		
CPI score for ex- post monitoring and evaluation	<i>r</i> Sig. (2-tailed) N	.757** .000 158	1 158	
CPI score for ex- post maintenance	<i>r</i> Sig. (2-tailed) N	.803** .000 191	.688** .000 123	1 191

** . Correlation is significant at the 0.01 level (2-tailed).

Information in Table 4.6.1 indicates that there was a statistically significant and strong positive correlation between community participation in the post-implementation monitoring and evaluation and sustainability of the two projects ($r = 0.757$, $p \{0.000\} < 0.01$); and community participation in the post-implementation maintenance and sustainability of the two projects ($r = 0.803$, $p \{0.000\} < 0.01$). Thus, an increase or a decrease in community participation in the two post-implementation stages would lead to an increase or a decrease in the level of sustainability of the two projects.

Based on the significant correlation results, the study used multiple linear regression to estimate the amount of change in the sustainability of the two projects explained by the combined contribution of community participation in the two post-implementation stages. This was done using a stochastic regression model given by $y = a + \beta_1 x_1 + \beta_2 x_2 + e$ tested at $\alpha = 0.01$ (1%) significance level. Tables 4.6.2, 4.6.3, and 4.6.4 summarize the regression results.

Table 4.6.2

Regression Model of Participation in Post-Implementation and Sustainability

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.822 ^a	.676	.673	3.248	
2	.871 ^b	.758	.754	2.819	

a. Predictors: (Constant), CPI score for the maintenance

b. Predictors: (Constant), CPI score for maintenance, CPI score for monitoring and evaluation

c. Dependent variable: Sustainability Index score

Information in Table 4.6.2 indicates that there was a strong relationship between the two independent variables (community participation in post-implementation monitoring and evaluation, and post-implementation maintenance) and sustainability of the two projects as indicated by the multiple correlation coefficient (R) value of 0.871. Thus, for every unit (100%) change in the combined community participation in the two post-implementation stages, there was a 0.851 (85.1%) change in sustainability of the two projects.

Based on the R results, the study measured the combined contribution of community participation in post-implementation monitoring and evaluation and post-implementation maintenance to sustainability of the two projects using R^2 . However, given the variations in the number of data pairings resulting from the differences in the number of the respondents who were aware evaluated the two post-implementation stages and sustainability of the two projects, the study used the R^2_{adj} . The value of R^2_{adj} was established to be 0.754 suggesting that community participation in the two post-implementation stages collectively explained or accounted for 75.4% of changes in the sustainability of the two projects. The study attributed the remaining 24.6% of changes in the sustainability of the two projects to the other variables other than the two independent variables in this study.

The study further determined the contribution of each independent variable (each post-implementation stage) to the combined 75.4% of the change in sustainability of the two projects. It used the Stepwise method in entering the independent variables into the regression model

according to the magnitude of the contribution of each variable to changes in the dependent variable measured by the $R^2_{adj} = 0.754$. The study established that community participation in the post-implementation maintenance alone contributed 67.3% out of the combined 75.4% change in sustainability. This suggests that community participation in the post-implementation monitoring and evaluation only contributed to the remaining 8.1% of the changes in the sustainability of the two projects.

The study then used the Analysis of Variance (ANOVA) – F-test to test the overall significance of the regression model given that the two independent variables accounted for 75.4% of the changes in sustainability of the two projects. Table 4.6.3 summarizes the F-test results.

Table 4.6.3
Significance of the Regression Model using the F-Test

Model		Sum of Squares	Df	Mean Square	F	Sig. (<i>p</i> -value)
1	Regression	2662.346	1	2662.346	252.298	.000 ^b
	Residual	1276.841	121	10.552		
	Total	3939.187	122			
2	Regression	2985.414	2	1492.707	187.807	.000 ^c
	Residual	953.773	120	7.948		
	Total	3939.187	122			

a. Dependent Variable: sustainability index score

b. Independent variables: (Constant), CPI score for maintenance

c. Independent variables: (Constant), CPI score for maintenance, CPI score for monitoring and evaluation

Information in Table 4.6.3 indicates that the two independent variables (community participation in the two post-implementation stages) had an F-value of $F_{2,120} = 187.807$ with $p \{0.000\} < 0.01$ (1% significance level). Therefore, we reject the null hypothesis and conclude that community participation in the post-implementation monitoring and evaluation, and maintenance had a statistically significant influence on sustainability of the two projects as perceived by the project beneficiaries. This suggests that the regression model was statistically significant in predicting

the influence of community participation in the two post-implementation stages on sustainability of the two projects.

Finally, the study used the significant F-test results to derive the actual regression model using the partial regression coefficients (β) of the two independent variables. The β measured the amount of change in the dependent variable (y) associated with one unit change in each independent variable (x) holding constant (controlling) the values of all other independent variables. Table 4.6.4 summarizes these regression coefficients of the independent variables.

Table 4.6.4

Regression Coefficients of Participation in the Post-Implementation Stages

Model	Unstandardized Coefficients		Standardized Coefficients		T	Sig.
	β	Std. Error	β			
1 (Constant)	5.274	1.037			5.084	.000
CPI score for ex-post maintenance	1.434	.090	.822		15.884	.000
2 (Constant)	-.417	1.268			-.329	.743
CPI score for ex-post maintenance	.960	.108	.550		8.888	.000
CPI score for ex-post monitoring and evaluation	.585	.092	.395		6.376	.000

a. Dependent variable: sustainability index score

Information in Table 4.6.4 indicates that the two independent variables had positive standardized partial regression coefficient (β) values namely $\beta_1 = 0.550$ for post-implementation maintenance, and $\beta_2 = 0.395$ for post-implementation monitoring and evaluation. From the positive signs, the direction of the relationship between the independent and dependent variables was inferred. Substituting the values of β in the regression model of $y = a + \beta_1x_1 + \beta_2x_2 + e$, we have $y = -0.417 + 0.550x_1 + 0.395x_2 + e$.

The regression model i.e. $y = -0.417 + 0.550x_1 + 0.395x_2 + e$ provided a statistical control for establishing the influence of each independent variable. From the model, holding the two independent variables constant ($x_1 = 0$ and $x_2 = 0$), sustainability would be negative (-0.417). This means that a lack of community participation in the post-implementation maintenance, and post-implementation monitoring and evaluation alone would result in a negative influence on sustainability of the two projects. However, the positive standardized β values suggest that community participation in the post-implementation maintenance and post-implementation monitoring and evaluation stages had a positive influence on sustainability of the two projects. From the regression model, community participation in the post-implementation maintenance had a significant and positive influence on sustainability ($t_1 = 8.888, p = 0.000$). A unit change (+ or -) in the community participation in post-implementation maintenance would result in a 0.550 (55.5%) change (+ or -) in sustainability of the two projects, holding community participation in post-implementation monitoring and evaluation and any other variable constant in the model. Similarly, community participation in post-implementation monitoring and evaluation had a significant and positive influence on sustainability of the two projects ($t_2 = 6.376, p = 0.000$). Thus, a unit change (+ or -) in the community participation in the post-implementation monitoring and evaluation would result in a 0.395 (39.5%) change (+ or -) in sustainability of the two projects, holding community participation in the post-implementation maintenance and any other variable constant in the model.

The study triangulated the results of correlation and regression analyses (two parametric tests) using the Pearson's Chi-Square (χ^2) test (non-parametric) as a test of independence (association) by transforming the indices (continuous variables) into categorical variables in terms of levels for the independent and dependent variables, which were cross tabulated. The aim was to increase the validity and generalization of the results. The study transformed the composite index scores of community participation in the two post-implementation stages and sustainability of the two projects as continuous variables into ordinal levels as categorical variables. The ordinal levels for community participation in the post-implementation stages (independent variables) and the sustainability of the two projects included low, average, and

high. The study cross-tabulated the perceived levels of community participation in the two post-implementation stages by perceived levels of the sustainability of the IUHP and BiP: PUP projects. The study used the χ^2 test to compare the frequency of cases as summarized in Table 4.6.5.

Table 4.6.5

Participation in the Post-Implementation across Levels of Sustainability

		Level of participation in ex-post maintenance			Total
		Low	Average	High/active	
Level of sustainability	Low	17 (58.6%)	18 (29.5%)	1 (1.0%)	36 (18.8%)
	Average	10 (34.5%)	35 (57.4%)	10 (9.9%)	55 (28.8%)
	High	2 (6.9%)	8 (13.1%)	90 (89.1%)	100 (52.4%)
Total		29	61	101	191
		$\chi^2 = 130.704$	$df = 4$	$p = 0.000$	$C = 0.637$
		Level of participation in ex-post monitoring and evaluation			Total
		Low	Average	High/active	
Level of sustainability of the project	Low	6 (75.0%)	17(30.9%)	2 (2.1%)	25 (15.8%)
	Average	1 (12.5%)	34 (61.8%)	17 (17.9%)	52 (32.9%)
	High	1 (12.5%)	4 (7.3%)	76 (80.0%)	81 (51.3%)
Total		8	55	95	158
		$\chi^2 = 96.810$	$df = 4$	$p = 0.000$	$C = 0.616$

Table 4.6.5 indicates that there was a significant association between the levels of community participation in the two post-implementation stages and the perceived levels of sustainability of the two projects. There was a similar pattern in the distribution of the respondents in the levels of sustainability of the two projects across the perceived levels of community participation in the two post-implementation stages. In all cases, majority of the respondents who perceived high level of community participation in the two post-implementation stages also recorded a perceived high level of sustainability, and vice versa. For example, 89.1% (90) of the 101

respondents who perceived high level of participation in post-implementation maintenance had a perceived high level of sustainability of the two projects. Similarly, 58.6% (17) of the 29 respondents who recorded a low level of participation in the ex-post maintenance had a low level of sustainability of the two projects. The same applies to participation in the post-implementation monitoring and evaluation. The study supported these distributions by the χ^2 test values, where we had $\chi^2_{0.01,4} = 130.704$ for the post-implementation maintenance and $\chi^2_{0.01,4} = 96.810$ for the post-implementation monitoring and evaluation. Since $p(000 < 0.01)$, the third null hypothesis is rejected suggesting that community participation in the post-implementation monitoring and evaluation, and maintenance had a statistically significant influence on sustainability of the two projects as perceived by the project beneficiaries.

However, since χ^2 test is an omnibus test, the study used a Contingency Coefficient (C) to determine the strength and magnitude of association between the independent and dependent variables from the significant χ^2 test values. The C value for the ex-post maintenance and sustainability of the two projects was $C = 0.637$, while that of the ex-post monitoring and evaluation and sustainability was $C = 0.616$. The C values suggest a significant and strong relationship between participation in the two post-implementation stages and the sustainability of the IUHP and BiP: PUP projects. Thus, the higher the level of participation in the two post-implementation stages, the higher was the level of sustainability of the two projects.

The above findings in Tables 4.6.1 through 4.6.5 demonstrate the significant and positive influence of community participation in the post-implementation stages on sustainability of slum upgrading. Community participation in the post-implementation monitoring and evaluation enabled the sample beneficiaries to track the progress, participate in making decisions as well as take corrective measures by implementing lessons learnt. On the other hand, community participation in the post-implementation maintenance preserves and maintains the activities and benefits beyond the life cycle of a project. The two post-implementation stages formed the pillar of the sustainability of the two projects by emphasizing on capacity building and empowerment of the sample beneficiaries. Community participation in the two post-implementation stages encouraged project beneficiaries to take control of the post-project period and enhanced

ownership and responsibility of the projects. This led to greater self-reliance and empowerment of the project beneficiaries, and acquisition of skills to continue and maintain the projects after the exit of the funding NGO. Thus, the higher the perceived level of beneficiary participation in the post-implementation stages, the greater was the perceived sustainability of the projects. However, community participation in post-implementation maintenance had the greatest contribution to changes in the sustainability of the two projects.

These findings were in consonance with observations of Morfaw (2014) and UN-Habitat (2014) that ex-post maintenance was the most visible form of sustainability of a project. This is because beneficiaries have the powers to decide whether to maintain activities of an implemented project or not (Noori, 2017). This involves ongoing support and training after project implementation or completion and after the exit of the external agencies to ensure the interventions are successful and sustainable in the long-term (Chenga et al., 2006). However, there were cases of limited attention by external agencies to operation and maintenance after completion (AusAID, 2010; Cities Alliance, 2014; UN-Habitat, 2011; World Bank, 2010). Similarly, the success of slum upgrading depends on the availability of a reliable monitoring and evaluation system to assess the real impact, replicate the project and sound an alarm when things go wrong (Imparato & Ruster, 2003). Active involvement in the monitoring and evaluation and the criteria used significantly influence the sustainability of a project and reduce the chances of misappropriation of resources (Barasa & Jelagat, 2013; World Bank, 2010).

4.7 Perceived Impact of the Projects on the Living Conditions of Slum Dwellers

Objective four assessed the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the living conditions in the selected slum settlements. The study based the objective on a recommendation by the UN-Habitat (2014a), and UN (2010) that the overall aim of slum upgrading is to improve the living conditions by addressing the five key characteristics of a slum settlement. These characteristics include inadequate access to improved water, inadequate access to improved sanitation, poor structural quality of housing, lack of security of tenure, and overcrowding.

In this study, the two projects had a selection criteria of the beneficiaries for the two main interventions namely access to low cost housing and promotion of IGAs. For access to low cost housing, there was legal ownership of land, willingness to follow laid down construction standards and by-laws, and the ability to raise at least 60.0% of the total cost of construction. On the other hand, most of the IGAs targeted beneficiaries organized in savings and IGA groups. In addition, the NGO conducted community needs assessment in the two secondary cities to prioritize issues for intervention and identify the most deprived neighbourhoods. These assessments provided data about the situation of a neighbourhood in general and not any baseline data for each beneficiary. Therefore, there was no credible comparison/control group that could allow for the application of the DiD technique. In this case, the study collected ex-post cross-sectional data from the beneficiaries of the project to approximate longitudinal data with retrospective questions about the pre-project, project and post-project periods. The study anchored the questions on specific aspects/activities of the two projects to allow recall of the pre-project, project and post-project period through the perceptions of the beneficiaries. Therefore, the sample project beneficiaries were asked about their perceptions of the impact of the two projects on the above key characteristics by comparing the conditions in two-time frames namely the pre-project period and post-project period. This provided a reference for the respondents to assess their perceived change before and after implementation of the two projects. Note that the subjective nature of perception changes impact evaluation to an impact assessment. The study discussed the perceived impact of the IUHP and BiP: PUP projects on each characteristic in the following five sub-sections:

4.7.1 Beneficiary Perception of the Impact on Access to Improved Water

The study assessed the main source of water, time and distance taken to access the source, the perceived adequacy of supply, and the perceived role and impact of the IUHP and BiP: PUP projects. It adopted the WHO and UNICEF (2013), and UN-Habitat (2006) classification of sources of water into two groups namely improved sources and unimproved sources. The respondents varied in the main source of water used in their households as summarized in Table 4.7.1.

Table 4.7.1

Main Source of Water in the Household of the Sample Beneficiaries

Category	Source	Project		Total sample	
		IUHP	BiP: PUP	Frequency	%
Improved source	Protected natural spring	0(0.0%)	209(75.2%)	209	58.1
	Public tap/stand pipe	50(61.0%)	34(12.2%)	84	23.3
	Piped water to the house	19(23.2%)	2(0.7%)	21	5.8
	Protected dug well	0(0.0%)	19(6.8%)	19	5.3
	Piped water to plot	7 (8.5%)	1(0.4%)	8	2.2
	Borehole (tube well)	0(0.0%)	7(2.5%)	7	1.9
Unimproved source	Water vendors	6(7.3%)	6(2.2%)	12	3.3
Total		82	278	360	100.0

Information in Table 4.7.1 shows diverse sources of water, also verified through field observations. Using the criteria by UN-Habitat (2006), and WHO and UNICEF (2013), 96.7% of the respondents, including 92.7% from the IUHP and 97.8% from BiP: PUP project, had access to improved sources of water. The sources included protected natural springs and shallow wells (58.1%), public tap/standpipes (23.3%), piped water to the house (5.8%), protected dug wells (5.3%), water vendors (3.3%), piped water to plot (2.2%), and boreholes (1.9%).

The study established that all the 58.1% (209) of the respondents who relied on protected natural springs and shallow wells were from the BiP: PUP project. The study attributed this to the availability of natural sources of water such as the natural springs, rivers and shallow wells in the three project sites in in Kitale. The respondents reported that ITDG-EA in partnership with another NGO known as Vi-Agroforestry rehabilitated, conserved, and protected 15 protected natural springs and shallow wells across the three project sites. The two NGOs sensitized the residents on conservation of natural sources of water through planting of trees in the catchment areas. In addition, all the respondents who accessed water from protected dug wells (5.3%) and boreholes/tube wells (1.9%) were from the BiP: PUP project. The ITDG-EA in partnership with

other stakeholders took advantage of the high water table in the three project sites and sunk three boreholes and two protect dug wells.

The respondents also reported that MCN and KMC supported and facilitated on-site public standpipe (23.3%), connection of piped water to individual households (5.8%) and piped water to plots (2.2%). However, these sources were more prominent in the IUHP where 61.0% of the respondents used public standpipe, 23.2% had piped water connections to the houses, while 8.5% had piped water to plot (compound). The study attributed this to the lack of natural sources of water in the three project sites of Nakuru compared to Kitale. This explained the significant role of the MCN in provision of water in the three project sites of the IUHP.

Information in Table 4.7.1 indicates that 3.3% of the respondents depended on unimproved sources of water in the form of private water vendors, especially in areas not served by the public water system or located far away from the natural sources. The respondents reported that water from the private water vendors were expensive and unreliable in quality, quantity, and timing.

Information in Table 4.7.1 revealed that only 5.8% (21) of the respondents had water connections to individual households, including 23.2% (19) from the IUHP and 0.7% (2) from BiP: PUP project. The respondents observed that lack of home ownership, high levels of poverty and general neglect of the settlements by the local authorities had contributed to the low household water connection. These findings of low household water connection corroborate observations by Gulyani et al. (2005), Gulyani and Talukdar (2008), and Obrist et al. (2006) that only 19.0% of the population in the slums of Nairobi and Abidjan had household water connections.

From the main source, the study determined the distance covered by a household of the sample project beneficiaries and the perceived level of adequacy of the supply of water. The study established that 68.6% (247) of the respondents relied on sources of water located within a radius of 5 to 100 metres from their households with a mean of 31.35 metres and taking a mean of 18.68 minutes on a round trip to collect water. The study considered the established distance to the nearest sources of water and the time taken to collect water to be within the recommendation of UN (2007), UN-Habitat (2003; 2009a), and WHO and UNICEF (2013). The three sources

recommend that a source of water should be within 1000 metres from the dwelling unit, if not available within the dwelling unit, and collection time not exceeding 30 minutes without the extreme effort. Therefore, the respondents were within the recommended physical access to the nearest source of water in the project sites. The study attributed this to the role of the two projects in improving access to water. In addition, majority (77.7%) of the respondents preferred collecting water from the above sources in the morning or evening hours, while the remaining 22.3% (55) did it on a need basis. The study established that in most households, women and children were responsible for collecting water from the main source.

In connection with the source, time and distance covered, the study assessed the perceived level of adequacy of water supply from the main sources. However, the study established that the sample project beneficiaries kept no records of the exact amount of water used in the household. Therefore, the sample beneficiaries were asked about their perceived level of adequacy of water at the household level by comparing the perceived demand (the approximate amount of water used by a household per day) and the perceived supply (the approximate amount of water drawn from the main source) as summarized Table 4.7.2.

Table 4.7.2
Perceived Adequacy of Water Supply in the Household

		Project		Total
		IUHP	BiP: PUP	
Adequacy of water	Adequate	30 (36.6%)	256 (92.1%)	286 (79.4%)
	Inadequate	52 (63.4%)	22 (7.9%)	74 (20.6%)
N		82	278	360

Information in Table 4.7.2 indicates that 92.1% (256) of the sample project beneficiaries from the BiP: PUP project and 36.6% (30) from IUHP reported adequate water supply from the main source. The study attributed the high proportion (92.1%) from the BiP: PUP project to the rehabilitation, conservation, and protection of natural springs and shallow wells, and sinking of dug wells and boreholes in the project sites. This ensured unlimited and constant supply of water throughout the year at no cost to the consumer. The situation was in contrast with the IUHP

where 63.4% (52) of the respondents reported inadequate supply of water. They relied mainly on the supply of water from the MCN, water kiosks, and private water vendors, which was unreliable in quantity, quality and timing, and frequently expensive. Plate 4.7.1 shows a section of residents of the Kwa Rhonda project site of the IUHP, drawing water from a leaking water pipe along the road. The study established that the residents used the water for drinking and cooking without treatment disregarding the potential risk to their health.



Plate 4.7.1: A Woman Drawing Water from a Leaking Pipe in Kwa Rhonda Project Site

Information in Table 4.7.2 also indicates that 20.6% (74) of the sample project beneficiaries, including 63.4% (52) from the IUHP and 7.9% (22) from BiP: PUP project, experienced inadequate water supply. The 74 respondents were asked about their coping mechanisms with inadequate water supply as summarized in Table 4.7.3.

Table 4.7.3

Coping with Inadequate Water Supply by the Sample Project Beneficiaries

Coping strategies	Frequency	%
Rationing the available water	23	31.1
Sufficient storage	19	25.7
Reliance on diverse sources of water	19	25.7
Buying from water vendors/kiosks	13	17.6
Total	74	100.0

From information in Table 4.7.3, 31.1% (23) of the respondents rationed the little water available by minimizing misuse. This was especially the case for the IUHP where respondents faced water shortages. The study revealed that 25.7% (19) of the respondents invested in sufficient storage facilities by harvesting and storing water during times of high supply, especially during the rainy season, which cushioned them in times of deficit. Another 25.7% (19) relied on multiple sources of water, which ensured constant supply. The remaining 17.6% (13) bought water from the various strategically located water kiosks or private water vendors. These results were in consonant with observations by the Water and Sanitation Program (2007) that many slum households stored water in reservoirs, and supplemented piped water with water from tanker operators and water vendors. For example, Crow and Odaba (2010) reported that residents in slums in Nairobi, Kenya, stored large quantities of water in homes for use during times of shortages and irregular supply.

From the perceived adequacy of water supply, the respondents were asked about the role of the IUHP and BiP: PUP projects in improving access to water. Table 4.7.4 summarized the views of the respondents.

Table 4.7.4

Perceived Role of the Projects in Improving Access to Water

		Project		Total
		IUHP	BiP: PUP	
Role of the project	Yes	19 (23.2%)	269 (96.8%)	288 (80.0%)
	No	63 (76.8%)	9 (3.2%)	72 (20.0%)
Total		82	278	360

Information in Table 4.7.4 indicates that 96.8% (269) of the sample project beneficiaries from the BiP: PUP project and 23.2% (19) from IUHP, reported that the two played a significant role in improving access to water. The study attributed the variation in the proportions to the differences in the number of water projects supported by the two projects. The BiP: PUP project facilitated rehabilitation, conservation, and protection of diverse water projects because of the availability of natural sources of water in the project sites. This provided access to water, in sufficient quantity, by all residents in the project sites. This was in contrast with the IUHP, where respondents relied on the supply of water from the MCN due to lack of natural sources in the project sites. The IUHP in partnership with the MCN facilitated one community water project (NAROKA) in Kwa Rhonda project site, with several water points in strategic locations.

The 288 respondents were asked about the specific roles that the two projects played in improving access to water as illustrated in Table 4.7.5.

Table 4.7.5

Specific Perceived Roles of the Projects in Improving Access to Water

Contribution	Project		Total sample	
	IUHP	BiP: PUP	Frequency	%
Rehabilitation, conservation and protection of natural springs	0(0.0%)	181(67.3%)	181	62.8
Construction of water kiosks and boreholes	0(0.0%)	78(29.0%)	78	27.1
Subsidized prices from the water kiosks	4(21.1%)	10(2.7%)	14	4.9
Partnership with local authority	15(78.9%)	0(0.0%)	15	5.2
Total	19	269	288	100.0

Information in Table 4.7.5 indicates that 78.9% (15) of the respondents reported that the IUHP in partnership with the MCN and ICLEI facilitated the construction of the NAROKA community water project with several water kiosks strategically located in Kwa Rhonda and Kaptembwo neighbourhoods. The ITDG-EA and ICLEI provided financial and technical support, while MCN provided land and a direct water line to the water kiosks for a constant supply. NAROKA sold water to the residents at subsidized prices compared to private commercial water vendors. The BiP: PUP project rehabilitated, conserved, and protected natural springs and shallow wells (67.3%), constructed water kiosks and boreholes (29.0%), and subsidized prices by project water kiosks (2.7%). These diverse sources of water ensured improved access by increasing supply, improving reliability, and reducing prices and distance to the nearest source of water. To demonstrate improved access to water from the protected natural springs, a 50-years old female respondent from the Shimo-La-Tewa area of Kitale in Box 4.7.1 observed that:

Box 4.7.1: A Respondent's Access to Water in Shimo-La-Tewa Project Site

“Prior to the year 2001, my daughters used to take more than 30 minutes to fetch water from private water kiosks or polluted springs and rivers located more than 200 metres away. However, in the year 2001, ITDG-EA and other stakeholders rehabilitated, conserved and protected natural springs and shallow wells, and constructed water and sanitation projects in this area. This had led to unlimited access to water in sufficient quantity and quality. Today, my family spends about 10-15 minutes on a round trip to fetch water from the nearest rehabilitated and protected natural spring, which was located less than 100 metres from the house. This has enabled my family to get enough time to spend on other domestic chores. Currently, my granddaughters prefer fetching water in the evening after schools or in the morning on weekends and holidays. God bless the BiP: PUP project and all other stakeholders who were involved in improving our access to water.”

Interview on 12th November 2019, at Shimo-La-Tewa project site, Kitale

The sample project beneficiaries were asked to rate their perceived overall impact of the two projects on improving access to water by comparing the pre-project and post-project periods. The rating was a five-point Likert scale ranging from 0 to 4 as described in Section 3.7. Table 4.7.6 summarizes the respondents' perceived ratings of the overall impact of the IUHP and BiP: PUP projects on improving access to water.

Table 4.7.6

Perceived Impact of the Projects on Improving Access to Water

		Project		Total
		IUHP	BiP: PUP	
Level of perceived impact	No Impact	63 (76.8%)	9 (3.2%)	72 (20.0%)
	Low	5 (6.1%)	3 (1.1%)	8 (2.2%)
	Average	1 (1.2%)	21 (7.6%)	22 (6.1%)
	High	10 (12.2%)	93 (33.5%)	103 (28.6%)
	Very high	3 (3.7%)	152 (54.7%)	155 (43.1%)
Total		82	278	360

Information in Table 4.7.6 shows that 76.8% (63) of the sample project beneficiaries from the IUHP perceived no impact, while 54.7% (152) from BiP: PUP project perceived a very high impact on improving access to water. The variation in the perception of the impact of the two projects was in tandem with the differences in the perceived adequacy of water supply (Table 4.7.2) and the specific role that the two projects played in improving access to water (Table 4.7.5). The BiP: PUP project initiated and supported more water projects compared to IUHP in the project sites. A combined 28.6% (103) of the sample project beneficiaries perceived the impact of the two projects as high, while 43.1% (155) perceived it to be very high. The two projects improved the water supply, and reduced cost, time and distance spent to collect water. These results corroborate observations by Evans (2005), Fewtrell and Colford (2004), Galiani et al. (2005), and Jalan and Ravallion (2003) that slum upgrading plays a critical role in improving access to water through the construction of water projects and subsidization of prices, which ensures reliability in supply and pricing.

The study further established that the two projects had put in place several measures to sustain improved access to water in the six project sites. The 288 sample project beneficiaries enumerated these measures as captured in Table 4.7.7.

Table 4.7.7

Measures to Sustain Improved Access to Water

Measures	Project		Total sample	
	IUHP	BiP: PUP	Frequency	%
Prompt and timely repairs	6(31.6%)	69(25.7%)	75	26.0
Conservation of the water catchment	0(0.0%)	64(23.8%)	64	22.2
Personnel for monitoring and protection	6(31.6%)	49(18.2%)	55	19.1
Formation of water committee	5(26.3%)	43(16.0%)	48	16.7
Access to multiple sources of water	0(0.0%)	38(14.1%)	38	13.2
Partnership with local authority	2(10.5%)	6(2.2%)	8	2.8
Total	19	269	288	100.0

Information in Table 4.7.7 indicate that there was prompt and timely repair of any malfunction source of water. The ITDG-EA and Vi-Agroforestry facilitated conservation of the catchment area of the protected natural springs and shallow wells through tree planting and general cleaning of the environment. The two projects employed personnel to monitor and protect sources of water from incidences of vandalism. They also encouraged the formation of water committees to manage the water projects, conduct regular surveillance, and provide timely information for decision-making. The BiP: PUP project facilitated access to diverse sources of water, which supplemented and cushioned each other for a constant water supply. The respondents appreciated the partnership between ITDG-EA and respective local authorities in facilitating and supporting various water projects. The MCN and KMC provided land for the construction of water kiosks and a direct water line of water supply. However, the IUHP and BiP: PUP projects encountered several challenges in the process of ensuring sustainable improved access to water as summarized in Table 4.7.8.

Table 4.7.8
Challenges in Sustaining Improved Access to Water

Challenge	Project		Total sample	
	IUHP	BiP: PUP	Frequency	%
Vandalism	9(47.6%)	82(30.5%)	91	31.6
Limited finances	0(0.0%)	59(21.9%)	59	20.5
Lack of commitment and coordination	0(0.0%)	29(10.8%)	29	10.1
High levels of poverty	0(0.0%)	28(10.4%)	28	9.7
Heavy rainfall and soil erosion	0(0.0%)	25(9.3%)	25	8.7
Destruction of surrounding area	0(0.0%)	22(8.2%)	22	7.6
Poor drainage and contamination	0(0.0%)	12(4.5%)	12	4.2
Illegal connections	5(26.3%)	3(1.1%)	8	2.8
Limited supply in drought season	3(15.8%)	4(1.5%)	7	2.4
Increased population	2(10.5%)	5(1.9%)	7	2.4
Total	19	269	288	100.0

Information in Table 4.7.8 indicates that 31.6% (91) of the sample project beneficiaries reported numerous incidences of vandalism of the sources of water through illegal connections or breaking and stealing of water pipes. This often caused shortages in water supply in the affected project sites. The respondents attributed cases of vandalism to the mushrooming of scrap metal and plastic recycling dealers in the two secondary cities, which encouraged buying and selling of used metal pipes and plastics in the local markets. The respondents reported that this had lured many unemployed youths into breaking and stealing of plastic and metal water pipes for sale. In addition, ITDG-EA initiated and facilitated most of the water projects as IGAs for specific CBOs targeting non-members and the rest of the community as customers. The situation created a feeling of discrimination, exploitation and negative attitude among non-members in the community. The respondents observed that this was a major contributor to incidences of vandalism of water projects. As a result, 2.8% (8) of the respondents reported illegal connection and selling of water in the project sites (see Plate 4.7.2). According to field observations, the owner of this homestead (Plate 4.7.2) had illegally tapped and diverted water from the main pipe supplying one of the IUHP water projects in the area (NAROKA) and selling it in the neighbourhood at very low prices. This not only affected the water supply to the project but also reduced the level of income to the water project.



Plate 4.7.2: Illegal Water Connections in Kwa Rhonda Project Site

Further, information from Table 4.7.8 shows that 21.9% (59) and 10.4% (28) of the respondents from the BiP: PUP project reported that limited finances and high levels of poverty, respectively, had contributed to low maintenance and conservation of sources of water. This mostly affected the protected natural sources of water, which lacked direct ownership and responsibility in terms of maintenance. As a result, some members were unwilling to take up financial responsibilities for maintenance. For example, Plate 4.7.3 shows one of the broken down protected natural springs in the Kipsongo project site, which required only minor repairs.



Plate 4.7.3: A Broken and Neglected Natural Spring in Kipsongo Project Site

Information in Table 4.7.8 also indicates that increased population (2.4%) and limited supply of water during the drought season (2.4%) affected any measure to sustain access to water. The respondents reported that the population in the project sites had increased over time, which outstripped water supply, especially during the drought season of January to March. In addition, heavy rainfall and soil erosion (8.7%), destruction of the surrounding area (7.6%), and poor drainage and contamination (4.2%) contributed to the destruction of natural sources of water. The respondents observed that the increased population in Kitale had contributed to unsustainable agricultural practices and destruction of water catchment areas. This in turn contributed to flooding and soil erosion during the heavy rain season. The poor drainage system further compounded the situation leading to contamination of sources of water.

4.7.2 Beneficiary Perception of the Impact on Access to Improved Sanitation

The study assessed the type of toilet facilities, drainage systems, waste disposal mechanisms, and the perceived role and impact of the IUHP and BiP: PUP projects. The study adopted the classification of sanitation facilities by WHO and UNICEF (2013), which included improved sanitation and unimproved sanitation. The sample project beneficiaries were asked about the type of toilet facility that their household used and their responses summarized in Table 4.7.9.

Table 4.7.9

Type of Toilet Used by the Households of the Sample Project Beneficiaries

Category of sanitation		Project		Total sample	
		IUHP	BiP: PUP	Frequency	%
Improved sanitation	Pit latrine with a slab	15(18.3%)	104(37.4%)	119	33.1
	Flush toilet	42(51.2%)	8(2.9%)	50	13.9
	Ventilated improved pit latrine	16(19.5%)	22(7.9%)	38	10.6
	Composting toilet	2(2.4%)	3(1.1%)	5	1.4
Unimproved sanitation	Pit latrine without a slab	7(8.5%)	102(36.7%)	109	30.1
	Open defecation	0(0.0%)	29(10.4%)	29	8.1
	Flying toilet	0(0.0%)	10(3.6%)	10	2.8
Total		82	278	360	100.0

Information in Table 4.7.9 indicates diverse types of toilet facilities. Using the criteria by WHO and UNICEF (2013), 59.0% (212) of the sample project beneficiaries, including 94.5% (75) from the IUHP and 49.3% (137) from BiP: PUP project, had access to improved sanitary toilet facilities in the form of a pit latrine with a slab (33.1%), flush toilet (13.9%), ventilated improved pit latrine (10.6%), and composting toilet (1.4). The study attributed the variation in the proportions of beneficiaries from the two projects to the role of house ownership and security of tenure. The study established that house ownership was an inducement for investment in the construction of improved sanitary toilet facilities. The IUHP had a high proportion of individual home ownership, which could have contributed to the construction of more improved toilet

facilities compared to the BiP: PUP project. Plate 4.7.4 is an example of a ventilated improved pit latrine in Kwa Rhonda project site.



Plate 4.7.4: A Ventiladed Improved Pit Latrine in Kwa Rhonda Project Site

Further, the study revealed that the use of flush toilets was common among respondents who lived in their own houses with individual water connections. However, inadequate connectivity to a public drainage and sewerage system and a lack of a reliable piped water supply system limited its use. Thus, some respondents manually flushed their toilets using a bucket of water. In addition, 1.4% (5) of the respondents used composting toilets in the form of UDDTs.

Information in Table 4.7.9 also indicates that 41.0% (148) of the sample project beneficiaries used unimproved sanitary toilet facilities in the form of pit latrines without a slab (30.1%), open defecation (8.1%), and flying toilet (2.8%). Field observations indicated that most of the pit latrines were poorly maintained, over-used and hazardous lacking proper maintenance, i.e. they were filthy with some of them overflowing. The latrines were congested and squeezed in between structures leading to inadequate space for ventilation and lighting. The latrines consisted of a simple dug pit, poorly constructed and with a floor mainly covered by timber logs, and with

or without a roof, poor or no walls and no ventilation. Plate 4.7.5 is an example of unimproved pit latrine in the Lake View project site.



Plate 4.7.5: Unimproved Pit Latrines in Lake View Project Site

These results about unimproved pit latrines were in consonant with observations from previous studies such as Chipeta et al. (2017) who concluded that inadequate space in informal settlements was a barrier to replacement and safe and hygienic pit-emptying of the latrines. This oftentimes leads to overflow and unsafe effluent discharge, which pollutes the environment.

In addition to unimproved pit latrines, 8.1% (29) of the sample project beneficiaries openly defecated in the nearby bushes, dumpsite and fields, while 2.8% (10) used ‘flying toilets’ (Table 4.7.9). The flying toilets entailed defecating in plastic bag carriers or buckets, especially at night, and randomly discarding the waste in the surrounding bushes, dumpsites, and open spaces. This was common in the Kipsongo project site in Kitale, which was a squatter settlement located on a previous dumpsite with grossly inadequate toilet facilities (Plate 4.7.6). Respondents from the FGD for the BiP: PUP project reported that the settlement had only four pit latrines, serving more than 2000 people.



Plate 4.7.6: The Poor Living Conditions in Kipsongo Project Site

The findings about open defecation and flying toilets in slum areas were consistent with observations by WHO and UNICEF (2011) that a significant proportion of the urban population relied on open defecation including Southern Asia (14%), SSA (8%), south-Eastern Asia (8%), and Eastern Asia (6%). Studies in Kenya shows a prolific use of flying toilets in various parts of Kibera slums in Nairobi because of inadequate toilet facilities, cultural habits, insecurity at night, the prohibitive cost of shared faculties, and lack of privacy of the available facilities (Corburn & Karanja, 2016; Cronin & Guthrie, 2011).

In connection with the type of toilet, the study established that 93.9% of the sample project beneficiaries shared toilet facilities with other households. On average, 17.54 persons (about 4 households) shared one toilet facility, including 16.98 persons from the IUHP and 17.85 persons from BiP: PUP project. This ratio was above the recommendation by UN-Habitat (2003b) of a maximum of two households for adequate sanitation.

The hygienic use of toilet facilities depends on the availability of an efficient drainage system. Therefore, the respondents were asked about the type of drainage system available in their households (Table 4.7.10).

Table 4.7.10

Type of Drainage System used by the Sample Project Beneficiaries

Type	Project		Total sample	
	IUHP	BiP: PUP	Frequency	%
Open space	34(41.5%)	162(58.3%)	196	54.4
Soak away	31(37.8%)	111(39.9%)	142	39.4
Concrete/closed gutters	15(18.3%)	5(1.8%)	20	5.6
Septic tank	2(2.4%)	0(0.0%)	2	.6
Total	82	278	360	100.0

Information in Table 4.7.10 shows that the common types of drainage systems were open space (54.4%), soak away (39.4%), concrete/closed gutters (5.6%), and septic tank (0.6%). From field observations, there was uncontrolled and poorly maintained open drainage running across the settlements with no designated place for waste disposal. In addition, poorly maintained channels carrying untreated wastewater often blocked with rubbish were a commonplace. Plate 4.7.7 shows a blocked open sewer in the Bondeni project site, while Plate 4.7.8 shows dumping of waste in the neighbouring Tuwan River in Tuwan project site.



Plate 4.7.7: Blocked Open Sewer in Bondeni Project Site



Plate 4.7.8: Dumping of Waste in Tuwan River in Tuwan Project Site

Furthermore, information in Table 4.7.10 shows that 5.6% (20) and 0.6% (2) of the respondents were connected to concrete/closed gutters and septic tanks, respectively. The 22 respondents

attributed their connection to the proximity of their houses to the main drainage system. This was in contrast to majority of the respondents who complained of neglect and lack of recognition by the local authorities in the provision of basic municipal services. They observed that local authorities paid minimal attention to sanitary conditions in their settlements resulting in the accumulation of garbage and waste. The results of this study confirm observations by Lall and Lall (2007), UN (2010), and UN-Habitat (2002b) that public authorities often regarded slums as informal, and not recognized and addressed as an integral part of the city. This had contributed to neglect and discrimination in the provision of basic services and infrastructure.

The study established that the sample project beneficiaries also varied in the waste disposal mechanism that they used as captured in Table 4.7.11.

Table 4.7.11

Garbage Disposal Mechanisms by the Sample Project Beneficiaries

Mechanisms	Frequency	%
Dumping	157	43.6
House-to-house collection and disposal	129	35.8
Burning	67	18.6
Burying	7	1.9
Total	360	100.0

Information in Table 4.7.11 shows that 43.6% (157) of the sample project beneficiaries dumped their collected waste in several strategically located refuse transfer chambers constructed with facilitation from a partnership between ITDG-EA and respective local authorities. However, the respondents alleged that some local politicians closed down a number of the refuse transfer chambers supported by the projects claiming that they were located on public land. Other respondents reported that some local politicians collaborated with the officials of the MCN and seized a lorry donated by the project to a local environmental group on the pretext of non-payment of taxes to the local authority. This resulted in unregulated dumping of waste in open public spaces and along the roads causing a serious health hazard.

The study revealed that 35.8% (129) of the sample project beneficiaries opted for house-to-house garbage collection and disposal services from local authorities and/or private companies. They reported that the local authorities had established various designated waste collection points in addition to the refuse transfer chambers. The two projects also supported the formation of various environmental groups, which conducted regular environmental clean-up exercises and encouraged the use of designated waste collection points. However, field observations showed that the dumping sites were insufficient and poorly maintained. There was irregular collection of the accumulated wastes leading to overflow and strewing of garbage in the settlement. As a result, some households procured private service providers to collect and dispose their waste regularly at a fee of between KES 150 and 200 per month (see Plate 4.7.9).



Plate 4.7.9: Private Waste Collection Services in Shimo-La-Tewa Project Site

The remaining 18.6% (67) and 1.9% (7) of the sample project beneficiaries burnt and buried their waste, respectively, due to inaccessible designated dumping sites or inability to afford private house-to-house collection. The respondents reported that they burnt flammable solid waste such as papers and pieces of wood and clothes and buried biodegradable waste such as food remains.

From the toilet facilities and drainage system, the respondents were asked about the role of the IUHP and BiP: PUP projects in improving access to sanitation (Table 4.7.12).

Table 4.7.12

Perceived Role of the Study Projects in Improving Access to Sanitation

		Project		
		IUHP	BiP: PUP	Total
Role of IUHP/BiP: PUP project	Yes	62 (75.6%)	176 (63.3%)	238 (66.1%)
	No	20 (24.4%)	102 (36.7%)	122 (33.9%)
Total		82	278	360

From the information in Table 4.7.12, 66.1% (238) of the sample project beneficiaries, including 75.6% (62) from the IUHP and 63.3% (176) from BiP: PUP project, acknowledged a significant role in improving access to sanitation. The 238 respondents enumerated the specific roles of the two projects as summarized in Table 4.7.13.

Table 4.7.13

Specific Perceived Roles of the Projects in Improving Access to Sanitation

Contribution	Project		Total sample	
	IUHP	BiP: PUP project	Frequency	%
Construction of sanitation blocks	1(1.6%)	119(67.6%)	120	50.4
Sensitization and awareness campaigns	32(51.6%)	46(26.1%)	78	32.8
Recycling waste into compost manure	18(29.0%)	1(0.6%)	19	8.0
Construction of refuse transfer chambers	7(11.3%)	9(5.1%)	16	6.7
Provision of cleaning equipment	3(4.8%)	0(0.0%)	3	1.3
Construction of Bio-centre or Bio-digester	1(1.6%)	1(0.6%)	2	.8
Total	62	176	238	100.0

Information in Table 4.7.13 indicates that 51.6% (32) of the sample project beneficiaries from the IUHP and 26.1% (46) from BiP: PUP project reported sensitization and awareness campaigns about the importance of sanitation. This encouraged the formation of several environmental groups that spearheaded the cleaning of the environment in the settlements. For example, the Twaweza Environmental Group in the Bondeni project site in Nakuru and the Kitale Green Town Environmental Group Initiative in Kitale promoted environmental awareness and sensitized residents on the needs for proper waste management.

In connection with the environmental groups, 4.8% (3) of the respondents reported that the IUHP bought a lorry and cleaning equipment (such as wheelbarrows, spade, brooms, gloves, etc.) for Daima Usafi Self-Help Group, an environmental group in the Lake View project site. During the time of data collection in Bondeni project site, the study came across members of Twaweza Environmental Group preparing for a cleaning exercise in the Bondeni project site (Plate 4.7.10).



Plate 4.7.10: Twaweza Environmental Group in a Cleaning Exercise

Furthermore, 67.6% (119) of the sample project beneficiaries from the BiP: PUP project and 1.6% (1) from the IUHP reported that the two projects facilitated construction of sanitation blocks. For example, ITDG-EA in partnership with other stakeholders facilitated the construction of five water and sanitation blocks comprising of two ventilated improved pit latrines and two bathrooms in Kitale using locally produced SSBs and lattices. In addition, 1.6% (1) of the respondents from the IUHP and 0.6% (1) from BiP: PUP project reported that the two projects facilitated the construction of bio-centres. For example, ITDG-EA in partnership with UMANDE Trust constructed two Bio-centres in Kwa Rhonda project site offering services such as toilets, bathrooms, community halls, biogas unit or kitchen, and water kiosk. The bio Centre charged at a relatively small fee to meet the cost of operation and maintenance and invest the balance. Lastly, 29.0% (18) of the sample project beneficiaries from the IUHP and 0.6% (1) from BiP: PUP project reported that the two projects facilitated environmental groups to recycle waste into compost manure. For example, the Twaweza Environmental Group recycled biodegradable waste into compost manure known as *mazingira* sold to farmers.

The sample project beneficiaries were asked to rate their perceived overall impact of the two projects on improving access to sanitation by comparing the pre-project and post-project periods. The rating was a five-point Likert scale ranging from 0 to 4 as described in Section 3.7. Table 4.7.14 summarizes the respondents' perceived ratings of the overall impact of the IUHP and BiP: PUP projects on improving access to sanitation.

Table 4.7.14

Perceived Impact of the Projects on Improving Access to Sanitation

		Project		
		IUHP	BiP: PUP	Total
Level of perceived impact	No impact	20 (24.4%)	102 (36.7%)	122 (33.9%)
	Low	11 (13.4%)	26 (9.4%)	37 (10.3%)
	Average	14 (17.1%)	22 (7.9%)	36 (10.0%)
	High	25 (30.5%)	97 (34.9%)	122 (33.9%)
	Very high	12 (14.6%)	31 (11.2%)	43 (11.9%)
Total		82	278	360

Information in Table 4.7.14 shows that in the IUHP, 24.4% (20) of the sample project beneficiaries perceived no impact, 13.4% (11) perceived it as low, 17.1% (14) as average, 30.5% (25) as high, and 14.6% (12) as very high. For the BiP: PUP project, 36.7% (102) of the sample project beneficiaries perceived no impact, 9.4% (26) perceived it as low, 7.9% (22) as average, 34.9% (97) as high, and 11.2% (31) as very high. A combined 33.9% (122) of the sample project beneficiaries perceived the impact as high and 11.9% (43) as very high. The study attributed the perceived positive impact to the role of the two projects in the construction of sanitation blocks, improved access to water, and the formation of various environmental groups.

The study established that the two projects had put in place several measures to sustain access to sanitation as reported by 238 sample project beneficiaries in Table 4.7.15.

Table 4.7.15

Measures by the Projects to Sustain Access to Sanitation

Measures	Project		Total sample	
	IUHP	BiP: PUP	Frequency	%
Sensitization and awareness	5(8.1%)	45(25.6%)	50	21.0
Formation to management committee	7(11.3%)	40(22.7%)	47	19.7
Training, seminar and exchange programme	24(38.7%)	20(11.4%)	44	18.5
Provision of cleaning equipment	12(19.4%)	17(9.7%)	29	12.2
Use generated income to run the project	11(17.7%)	17(9.7%)	28	11.8
Regular cleaning exercise	0(0.0%)	26(14.8%)	26	10.9
Formation of environmental groups	3(4.8%)	11(6.3%)	14	5.9
Total	62	176	238	100.0

Information in Table 4.7.15 reveals that there was sensitization and awareness (21.0%), formation of management committees (19.7%), training, seminar and exchange programme (18.5%), and provision of cleaning equipment (12.2%). In addition, we had ploughing back generated income to run the project (11.8%), regular cleaning exercise (10.9%), and the formation of environmental groups (5.9%). The respondents reported that the two projects facilitated various training, seminars, and exchange programmes. They encouraged the formation of environmental management committees to provide leadership and coordination of sanitation activities. They also provided cleaning equipment to the various environmental groups, which conducted regular environmental cleaning exercises. The respondents used the generated incomes from water and sanitation blocks to operate and maintain the projects. However, the IUHP and BiP: PUP projects encountered several challenges in ensuring sustainable access to sanitation as illustrated in Table 4.7.16.

Table 4.7.16

Challenges in Sustaining Improved Access to Sanitation

Challenges	Frequency	%
Lack of resources (high cost)	84	35.3
High level of poverty	59	24.8
Political interference	33	13.9
High population in the project sites	18	7.6
Lack of adequate cleaning equipment	15	6.3
Lack of market for recycled products	14	5.9
Poor drainage and flooding	11	4.6
Poor commitment and coordination	4	1.7
Total	238	100.0

Information in Table 4.7.16 reveals that 35.3% (84) and 24.8% (59) of the sample project beneficiaries reported that lack of resources (high cost) and high level of poverty, respectively, limited ability to collect and safely dispose wastes. Thus, many continued to dump their waste anywhere and everywhere, especially at night. In addition, 13.9% (33) of the respondents reported incidences of political interference in sanitation programmes. For example, respondents from the Lake View project site alleged that a local politician closed down some of the refuse transfer chambers established by the IUHP claiming that they were located on public open spaces. In addition, the respondents claimed that the MCN forcibly seized a lorry donated to Daima Usafi Self Help Group after the exit of ITDG-EA. In Kitale, the respondents alleged that local politicians influenced the County Government of Trans Nzoia to reclaim part of the land on which a project water and sanitation block was located. In an FGD with local CBOs, the leaders reported that the County Government had already earmarked to repossess 2.5 acres out of the 5.0 acres allocated to the project.

Further, 7.6% (18) of the sample project beneficiaries reported that high population pressure strained the capacity of the available dumping sites leading to overflow in cases of delayed emptying. Another 6.3% (15) cited inadequate cleaning equipment to cope with increased waste production and accumulation. Some of the environmental groups engaged in recycling the

collected waste into compost manure complained of lack of a market for the products because of limited farming activities. Lastly, 4.6% (11) of the respondents argued that the poor drainage system, especially during the rainy season, frequently blocked the sewerage systems.

4.7.3 Beneficiary Perception of the Impact on Structural Quality of Housing

The study assessed the type, permanency and location of the houses, and the perceived role and impact of the IUHP and BiP: PUP projects. The sample project beneficiaries reported living in the following type of houses as summarized in Table 4.7.17.

Table 4.7.17

Type of Houses of the Sample Project Beneficiaries

		Project		Total
		IUHP	BiP: PUP	
Type of house	Permanent	39 (47.6%)	41 (14.7%)	80 (22.2%)
	Semi-permanent	31 (37.8%)	56 (20.1%)	87 (24.2%)
	Mud	12 (14.6%)	163 (58.6%)	175 (48.6%)
	Polythene and plastic	0 (0.0%)	18 (6.5%)	18 (5.0%)
Total		82	278	360

Information in Table 4.7.17 indicates that 22.2% (80) of the sample project beneficiaries from the two projects lived in permanent houses. The respondents reported that the two projects facilitated and supported their construction of structurally quality and durable permanent low-cost houses through partial financing and capacity building in ABTs. The remaining 77.8% (280) lived in low-quality houses made up of temporary materials namely semi-permanent houses, and houses made of mud, polythene, and plastics. From field observations, most of the low-cost housing was physically dilapidated due to high levels of poverty and general neglect. The study established that 24.2% of the respondents lived in semi-permanent houses constructed using a mixture of permanent and temporal materials. All the 5.0% (18) of the respondents who lived in temporal houses made of polythene and plastic materials were from the Kipsongo project site of (Plate 4.7.11), which was a squatter settlement on a previous municipal dumpsite.



Plate 4.7.11: A House made of Polythene and Plastics in Kipsongo Project Site

In connection with the type of houses, the study further assessed the location as summarized the responses in Table 4.7.18.

Table 4.7.18

Location of the Houses of the Sample Project Beneficiaries

		Town		Total
		IUHP	BiP: PUP	
Location	Environmentally safe area	71 (86.6%)	198 (71.2%)	269 (74.7%)
	Hazardous area	11 (13.4%)	80 (28.8%)	91 (25.3%)
Total		82	278	360

According to Table 4.7.18, 74.7% (269) of the sample project beneficiaries reported that their houses were located in environmentally safe areas. This ensured the structural quality and durability of the houses by reducing vulnerability to avoidable hazards. The remaining 25.3% (91) considered the location of their houses as hazardous, including 28.8% (80) from the BiP: PUP project and 13.4% (11) from the IUHP. Out of the 80 respondents from the BiP: PUP project, 60 (75.0%) of them were migrants from the pastoralist Turkana community who settled on a previous municipal dumpsite and constructed rudimentary dwellings in the Kipsongo project site. The remaining 20 were from the Mitume area in Tuwan project site, which was

located on a slope bordering the Mitume River. For the IUHP, the 11 respondents included six from Lake View and five from Bondeni project sites. The Lake view project site was located in a sloping area bordering Nakuru National Park, while Bondeni project site was located in a low-lying area (a depression). The respondents reported that these locations were precarious, dangerous, and often prone to frequent environmental hazards (such as flooding and pollution), health dangers, social stigma, human-wildlife conflict, and the constant threat of eviction. The respondents reported that they lived in such precarious locations due to poverty and lack of alternatives.

These results about the precarious and hazardous locations confirm observations that the high poverty pushes residents to live in marginal areas prone to disasters, risk of legal eviction, health dangers, and/or social stigma (Meikle, 2002). Many governments avoid providing basic services in such hazardous locations for fear of legitimizing the settlements (Burra et al., 2003). This contributed to the areas being vulnerable to risks and disasters (UN-Habitat, 2008a).

From the type and location of houses, the sample project beneficiaries were about their perceived role of the two projects in improving the structural quality of housing (Table 4.7.19).

Table 4.7.19

Perceived Role of the Projects in Improving Structural Quality of Housing

		Project		Total
		IUHP	BiP: PUP	
Role of the project	Yes	39 (47.6%)	41 (14.7%)	80 (22.2%)
	No	43 (52.4%)	237 (85.3%)	280 (77.8%)
Total		82	278	360

Information in Table 4.7.19 indicates that 77.8% (280) of the sample project beneficiaries reported that the two projects played no role in improving the structural quality of their housing. The remaining 22.2% (80), including 47.7% (39) from the IUHP and 14.7% (41) from BiP: PUP project, reported that the two projects significantly contributed to improving the structural quality of their housing. The study attributed the relatively low proportion of the respondents who recognized the role of the two projects to the poverty levels and stringent conditions that

determined beneficiaries of low-cost housing. These conditions included legal ownership of land, willingness to follow laid down construction standards and by-laws, and the ability to raise at least 60.0% of the total cost of construction. The high levels of poverty and lack of security of land tenure hindered many of the residents from fulfilling the above conditions. Majority of the residents in the project sites were tenants leading to the limited involvement of the NGO in improving the structural quality of their housing. The 80 respondents were asked about the specific roles of the two projects in improving the structural quality of their houses. Table 4.7.20 summarized their views.

Table 4.7.20

Specific Roles of the Projects in Improving Structural Quality Housing

Contribution	Project		Total sample	
	IUHP	BiP: PUP	Frequency	%
Promotion of low cost ABTs	23(59.0%)	12(29.3%)	35	43.8
Training of artisans in low cost ABTs	14(35.9%)	12(29.3%)	26	32.5
Provision of partial financing	2(5.1%)	13(31.7%)	15	18.8
Formation of saving groups	0(0.0%)	4(9.8%)	4	5.0
Total	39	41	80	100.0

Information in Table 4.7.20 shows that 43.8% (35) of the sample project beneficiaries reported that the two projects promoted low-cost ABTs through production and utilization of SSBs and lattices. The Project Manager revealed that ITDG-EA initiated the two projects on an assumption that the lack of access to quality housing in the two secondary cities was due to the high cost of the technology used. As a result, 32.5% (26) of the respondents reported that the projects trained up to 50 local artisans and 35 youth groups in the ABTs to facilitate low-cost housing. In addition, ITDG-EA provided partial financing of construction at 40.0% of the total cost (18.8%), and encouraged the formation of saving groups to enable access to affordable credit (5.0%). These results affirm similar observations by Painter et al. (2006) that slum upgrading empowers the community to renovate and develop their housing using their own local resources. For example, UN-Habitat (2008a) cites the case of Kibera Slum Upgrading initiative, which linked

slum dwellers to credit institutions and encouraged the formation of saving schemes to mobilize resources for the construction of the houses.

The sample project beneficiaries were asked to rate their perceived overall impact of the two projects on improving the structural quality of housing by comparing the pre-project and post-project periods. The rating was a five-point Likert scale ranging from 0 to 4 as described in Section 3.7. Table 4.7.14 summarizes the respondents' perceived ratings of the overall impact of the IUHP and BiP: PUP projects on improving the structural quality of housing.

Table 4.7.21

Impact of the Projects in Improving Structural Quality of Housing

		Project		Total
		IUHP	BiP: PUP	
Level of perceived impact	No	43(52.4%)	237(85.3%)	280 (77.8%)
	Low	11 (13.4%)	4 (1.4%)	15 (4.2%)
	Average	5 (6.1%)	13 (4.7%)	18 (5.0%)
	High	11 (13.4%)	16 (5.8%)	27 (7.5%)
	Very high	12 (14.6%)	8 (2.8%)	20 (5.6%)
Total		82	278	360

Information in Table 4.7.21 indicates that 52.4% (43) of the sample project beneficiaries from the IUHP and 85.3% (237) from BiP: PUP project perceived no impact of the two projects in improving the structural quality of their houses. The high proportion of perceived no impact was attributed to the high level of poverty and lack of security of tenure among majority of the respondents. In addition, 13.4% (11) and 14.6% (12) of the respondents from the IUHP perceived high and very high impact, respectively. Similarly, to 5.8% (16) and 2.8% (8) of those respondents from the BiP: PUP project perceived high and very high impact, respectively. A combined 7.5% (27) and 5.6% (20) of the respondents perceived the impact of the two projects as high and very high, respectively, in improving the structural quality of housing. The findings suggest that despite the limited resources and the challenge of lack of security of tenure, the two projects had a positive impact through capacity building and empowerment, which enabled a few

respondents to improve the structural quality of their housing. These findings were in line with observations by Field (2005), Galiani and Schargrodsky (2010), and Turkstra and Popal (2010) that through capacity building and empowerment, slum upgrading encourages investment in private house ownership and improvement of their structural quality.

The 80 sample project beneficiaries were asked about the measures that the two projects had put in place to sustain the improved structural quality of the houses (Table 4.7.22).

Table 4.7.22

Measures by the Projects to Sustain Improved Quality Housing

Measures	Project		Total sample	
	IUHP	BiP: PUP	Frequency	%
Training in low cost ABTs	27(69.2%)	12(29.3%)	39	48.8
Provision of financial assistance	9(23.1%)	16(39.0%)	25	31.3
Individual responsibility	3(7.7%)	7(17.1%)	10	12.5
Regular monitoring	0(0.0%)	6(14.6%)	6	7.5
Total	39	41	80	100.0

Information in Table 4.7.22 indicate that 48.8% (39) of the sample project beneficiaries reported that the two projects trained local artisans and youth groups in low-cost ABTs, which ensured the sustainability of the structural quality of housing. The lattices (Plate 4.7.12) reduced the cost of upper floor slabs in multi-storey buildings.



Plate 4.7.12: Lattice Precast Flooring System in Lake View Project Site

Furthermore, 31.3% (25) of the sample project beneficiaries in Table 4.7.22 reported that, in addition to the contribution of 40.0% of the total cost of construction, the two projects provided financial assistance of KES 8000 for maintenance of every constructed low-cost house. The other 12.5% (10) of the respondents observed that the two projects encouraged them to assume individual responsibility in the maintenance of the constructed houses. The respondents observed that house ownership and improvement in the post-upgrading phase was a private matter and an individual responsibility that depended on the will, resources and ability of individuals and households. The remaining 7.5% (6) of the respondents observed that the beneficiaries of low-cost houses used the locally trained artisans to regularly monitor the physical conditions of their houses and conduct repairs where possible. This was evident from field observations where the study came across two local trained artisans repairing a project house constructed using SSBs in the Kwa Rhonda project site. However, the IUHP and BiP: PUP projects encountered several challenges in ensuring the sustainability of the structural quality of housing as summarized in Table 4.7.23.

Table 4.7.23

Challenges of the Projects in Sustaining Improved Quality Housing

Challenge	Frequency	%
Limited finances	31	38.8
Changes in weather affecting SSBs	17	21.3
Broken down or lost SSB machines	14	17.5
Political interference and corruption	9	11.3
Increased population	9	21.3
Total	80	100.0

Information in Table 4.7.23 indicates that the leading challenges included limited finances (38.8%), changes in climate affecting SSBs (21.3%), broken down or lost SSB machines (17.5%), political interference and corruption (11.3%), and high expectant population (11.3%). The sample project beneficiaries reported that weather changes affected the durability of SSB thus prompting regular and frequent repairs. Breakdown or lost SSB machines contributed to the lack or limited repairs of the houses built using ABTs.

4.7.4 Beneficiary Perception of the Impact on Security of Tenure

The study assessed the type of house ownership, form of security of tenure, and the perceived role and impact of the IUHP and BiP: PUP projects. Therefore, the sample project beneficiaries were asked about the type of houses they owned and their responses summarized in Table 4.7.24.

Table 4.7.24

Type of House Ownership by the Sample Project Beneficiaries

		Project		Total
		IUHP	BiP: PUP	
House ownership	Rental	27 (32.9%)	158 (56.8%)	185 (51.4%)
	Owner-occupied	55 (67.1%)	120 (43.2%)	175 (48.6%)
Total		82	278	360

Information in Table 4.7.24 indicates that 51.4% (185) of the sample project beneficiaries were tenants living in rental premises, while 48.6% (175) were owner-occupiers living in their own

houses. According to the Kenya Population and Housing Census Report of 2019, the results of this study including 51.4% of the sample project beneficiaries who lived in rental houses and 48.6% as owner-occupier was lower than the national average of 78.7% of urban residents in the country living in rental houses and 21.3% owning houses (KNBS, 2019). The study attributed the difference between the national and study statistics to the significant role played by the IUHP and BiP: PUP projects in improving access to low-cost housing through ABTs and IGAs in the two secondary cities under review.

The study further asked the 185 respondents who lived in rental houses whether they had any formal documentation supporting their rental agreement (Table 4.7.25).

Table 4.7.25

Official Documentation of Rental Agreement among the Beneficiaries

		Project		
		IUHP	BiP: PUP	Total
Official documentation for rent agreement	Yes	24 (88.9%)	62 (39.2%)	86 (46.5%)
	No	3 (11.1%)	96 (60.8%)	99 (53.5%)
Total		27	158	185

Information in Table 4.7.25 indicates that 46.5% (86) of the sample project beneficiaries, including 88.9% (24) from the IUHP and 39.2% (62) from BiP: PUP project, had official documents supporting their rental agreement. The respondents reported that the official documentation of the rental agreement spelt out the conditions of occupation and safeguarded them against any breach by either of the parties to the contractual agreement. The study attributed the lower percentage of the respondents with official documentation of rental agreement from the BiP: PUP project to the higher proportion of squatter settlements in the secondary city of Kitale compared to Nakuru. Kipsongo project site was originally a squatter settlement and therefore majority of the house owners lacked security of tenure. As a result, property owners hesitated in providing legal documentation of their houses.

Table 4.7.25 also indicates that 53.5% (99) of the sample project beneficiaries living in rental houses had no official documentation to support their rental agreement. This condition was likely to expose them to possibilities of manipulation and breach of contractual agreement by the property owners. Indeed, the respondents observed that some of the property owners took advantage of the situation and arbitrarily changed the rental terms and conditions with no consultation with the tenants. They added that this was the cause of their frequent shifting of houses, which denied them the possibility of developing a neighbourhood identity and a sense of belonging.

The study revealed that the 185 respondents who lived in rental houses (Table 4.7.24) varied in terms of the amount of rent in the last month before the study i.e. September 2019. On average, the respondents paid KES 1441.62 with a minimum of KES 200 and a maximum of KES 6000. However, 88.1% (163) of them regarded this amount to be too high due to high levels of poverty and the cost of living. The respondents added that the high amount was the cause of the numerous cases of defaulting in paying the rent.

The 175 respondents, who were owner-occupiers in Table 4.7.24, varied in the type of security of tenure with 76.0% (133) of them having formal/legal (*de jure*) security of tenure, while 24.0% (42) had informal (*de facto*) security of tenure. Information from the two FGDs attributed the higher proportion of the sample owner-occupiers with formal/legal (*de jure*) security of tenure to the role of the two projects in encouraging formation of CBOs and saving groups, which emphasized joint buying of land and processing of title deeds. This was more convenient and efficient compared to the individual acquisition. The legal security of tenure offered state protection against eviction threats and encouraged investment, renovations, improvement, and upgrading of the houses. The respondents observed a steady increase in the number of residents with legal documents of their house/land since the initiation of the two projects. The results of this study confirm observations from previous studies that security of tenure opens up possibilities of raising credit, investment, and improvement of housing (Cronin, 2011; UN-Habitat, 2008b). It also provides incentives for the state through local authorities to provide legal access to basic services and infrastructure (Bhatkal & Lucci, 2015).

The study established that the 133 respondents with formal/legal security of tenure varied in the type of legal security of tenure that they possessed as summarized in Figure 4.7.1.

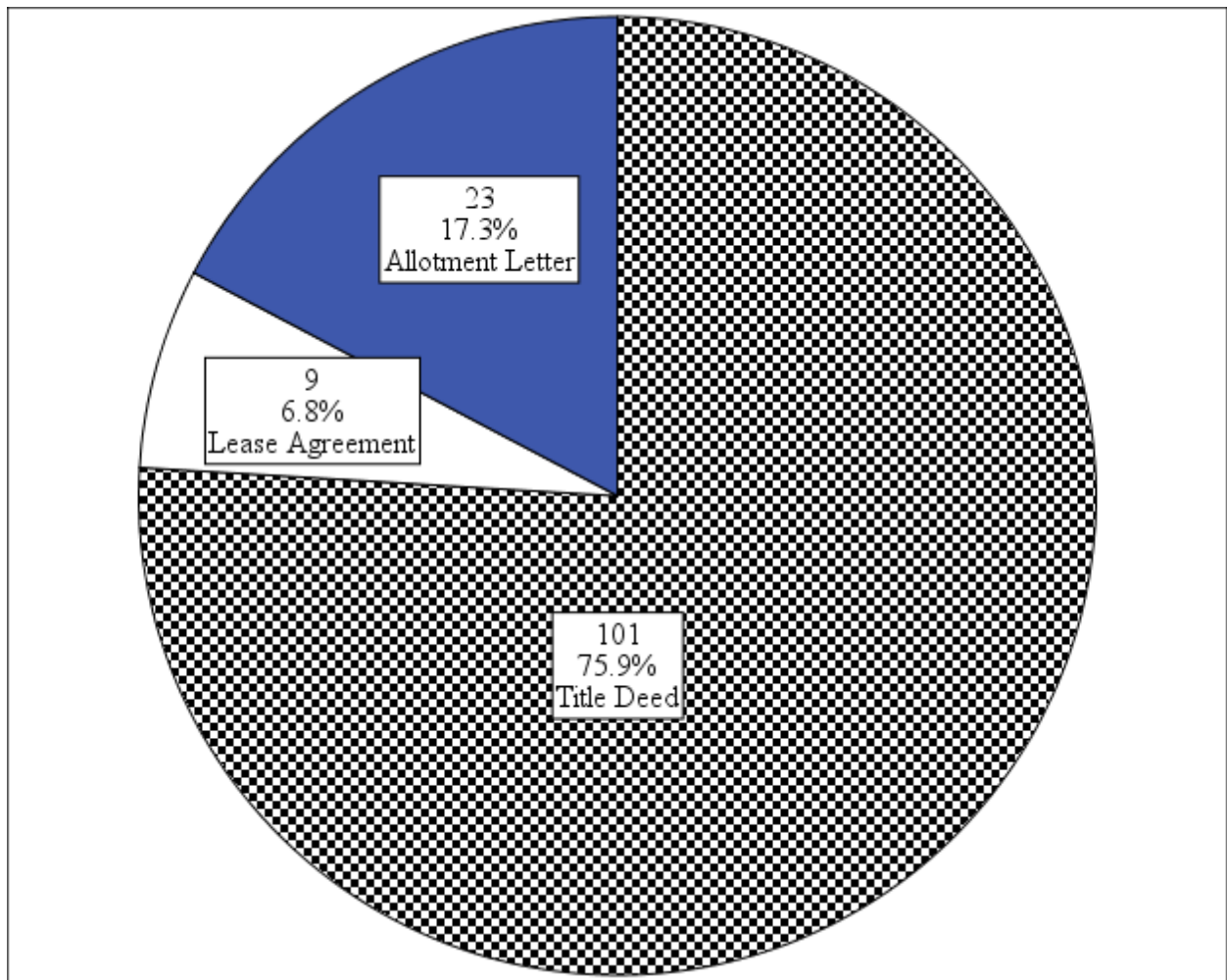


Figure 4.7.1: Type of Legal Security of Tenure among the Sample Project Beneficiaries

Information in Figure 4.7.1 shows that 75.9% (101) of the respondents had registered title deeds, which allowed them full control and user rights of the land and house. This encouraged them to invest in upgrading, renovating, and improving their homes and acted as collateral in securing loans from financial institutions and savings groups. Further, 17.3% (23) of the respondents had an allotment letter. This was a temporary document conferring the semi-legal status of ownership and user rights over the property (land or house) while waiting for the processing of a title deed. The allotment letters were common among members of CBOs and saving groups who bought joint land and were still processing title deeds. However, the respondents observed that the

allotment letters limited the nature and type of improvements that they could make on the land or house. The remaining 6.8 % (9) of the respondents had a lease agreement. This was a legal agreement of tenure conferring full user-rights but with no transfer rights over the property (land or house) within a certain fixed period and under specific conditions. This was common in the Bondeni project site in Nakuru where some respondents reported living in houses built on leased land. These results about the importance of title deeds confirms observations by De Moura et al. (2009) and Field and Kremer (2006) that land titling encourages economic growth, significantly increased the value of housing, and uses it as collateral in securing credit.

The study further established that the 24.0% (42) of the 175 owner-occupiers who had informal (*de facto*) security of tenure attributed their situation to their longevity of occupation of the land, inheritance, and/or political patronage. This was the case in many slum settlements in Kitale, which were largely squatter settlements. The study revealed that 42.9% (18) of the 42 respondents inherited the houses/land from their parents who also had no title deeds. The other 40.5% (17) of them were squatters who invaded an idle land around the dumpsite in the Kipsongo project site and had lived there for a long period. The remaining 16.7% (7) reported that local politicians through KMC allocated free land to the landless residents on the periphery of the Kipsongo project site without giving them title deeds.

From the type of house ownership and tenure system, the study asked the respondents about their perceived role of the IUHP and BiP: PUP projects in improving the security of tenure. Table 4.7.26 summarized the perceptions of respondents.

Table 4.7.26

Perceived Role of the Projects in Improving Security of Tenure

		Project		
		IUHP	BiP: PUP	Total
Role of the IUHP/BiP: PUP project	Yes	39 (47.6%)	41 (14.7%)	80 (22.2%)
	No	43 (52.4%)	237 (85.3%)	280 (77.8%)
Total		82	278	360

Information in Table 4.7.27 indicates that 22.2% (80) of the sample project beneficiaries, including 47.6% (39) from the IUHP and 14.7% (41) from BiP: PUP project, reported that the two projects played a role in improving security of tenure. The study attributed the variation in the proportion of responses from the two projects to the fact that the IUHP targeted individual residents directly based on evidence of legal ownership of land, willingness to follow construction standards and by-laws, and ability to raise at least 60.0% of the total cost of construction. This was in contrast with the BiP: PUP project, which prioritized the construction of group rental houses rather than individual houses. The respondents observed that the benefits of group rental houses took time to trickle down to individual members in the BiP: PUP project compared to those in the IUHP.

The study asked the 80 respondents about the specific roles of the two projects. The study established that 68.8% (55) formed saving groups and housing cooperatives, which offered affordable credit to buy land and/or construct houses. The remaining 31.3% (25) reported training in low-cost ABTs, receiving free soil-pressing machines, and benefiting from partial financing of house construction. Therefore, the two projects contributed to improved legal ownership of land and house, albeit directly benefiting only 22.2% (80) of the respondents. The relatively small proportion of beneficiaries of improved security of tenure was a replica of similar cases in previous studies and attributed to the high cost and limited supply of land in urban areas. Many slum upgrading projects register limited success in providing security of tenure because of the high cost and limited availability of land. For example, Betancur (2007) observed that although the Integrated Programme for Improvement of Slum Settlements in Medellín, Colombia, targeted 5180 households, only 10.0% of them benefited from improved land tenure because of limited resources.

The sample project beneficiaries were asked to rate their perceived overall impact of the two projects on improving the security of tenure by comparing the pre-project and post-project periods. The rating was a five-point Likert scale ranging from 0 to 4 as described in Section 3.7. Table 4.7.27 summarizes the respondents' perceived ratings of the overall impact of the IUHP and BiP: PUP projects on improving the security of tenure.

Table 4.7.27

Perceive Impact of the Projects on Improving Security of Tenure

		Project		
		IUHP	BiP: PUP	Total
Level of perceived impact	No	43(52.4%)	237(85.3%)	280 (77.8%)
	Low	2 (2.4%)	8 (2.9%)	10 (2.8%)
	Average	11 (13.4%)	11 (4.0%)	22 (6.1%)
	High	19 (23.2%)	13 (4.7%)	32 (8.9%)
	Very high	7 (8.5%)	9 (3.2%)	16 (4.4%)
Total		82	278	360

Information in Table 4.7.27 indicates that 52.4% (43) of the sample project beneficiaries from the IUHP and 85.3% (237) from BiP: PUP project perceived no impact of the two projects in improving the security of tenure. In addition, 23.2% (29) and 8.5% (7) of the respondents from the IUHP perceived high and very high impact, respectively. Similarly, to 4.7% (13) and 3.2% (9) of those respondents from the BiP: PUP project perceived high and very high impact, respectively. A combined 8.9% (32) and 4.4% (16) of the respondents perceived the impact of the two projects as high and very high, respectively, in improving the security of tenure. The findings suggest that security of tenure was an individual responsibility and depended on the ability to fulfill the earlier mentioned set conditions for benefiting from low-cost housing by the two projects. However, despite being an individual responsibility, the two projects created an enabling environment and had a positive impact on improving the security of tenure among the sample project beneficiaries.

The 80 sample project beneficiaries were about the measures put in place by the two projects to sustain improved security of tenure of the houses (Table 4.7.28).

Table 4.7.28

Measures by the Projects to Sustain Security of Tenure

Measures	Project		Total sample	
	IUHP	BiP: PUP	Frequency	%
Partial financing of cost of construction and free SSB machines	13(33.3%)	20(48.8%)	33	41.2
Individual responsibility	14(35.9%)	13(31.7%)	27	33.8
Buying and owning land/plot	12(30.8%)	8(19.5%)	20	25.0
Total	39	41	80	100.0

Information in Table 4.7.28 indicates that common measures included the provision of partial financing and provision of free soil-pressing machines (41.2%), assumption of individual responsibility (33.8%), and buying and owning land/plot (25.0%). These measures were geared towards facilitation of the construction of low-cost houses and/or buying of land. The respondents, however, observed that the two projects had encountered several challenges in ensuring the sustainability of security of tenure as summarized in Table 4.7.29.

Table 4.7.29

Challenges in Sustaining Security of Tenure

Challenge	Frequency	%
Perceived discrimination	26	32.5
Limited finance	22	27.5
High poverty levels	17	21.3
The collapse of saving groups and housing cooperative	15	18.8
Total	80	100.0

Table 4.7.29 indicates that the leading challenges included perceived discrimination in the determination of beneficiaries of low cost housing (32.5%), limited finance (27.5%), high levels of poverty (21.3%), and collapse of saving groups and housing cooperatives (18.8%). The study established that in addition to fulfilling the stringent conditions set for beneficiaries of low cost housing, ITDG-EA used a lottery method to determine the number. This limited the number of

low cost housing from the two projects. In an interview with the Project Manager of ITDG-EA, the study established that because of limited resources, the NGO adopted a lottery method using random numbers and selected a limited number of qualified beneficiaries. However, the sample project beneficiaries observed that this created a perception among the residents of deliberate bias aimed at benefiting preconceived local elites. Other respondents reported that although they had own plots of land, the high levels of poverty limited their ability to raise the proportion of the financial cost of construction required by the projects. In addition, the collapse of some of the saving groups after the exit of ITDG-EA led to a number of the sample project beneficiaries losing their hard-earned savings.

4.7.5 Beneficiary Perception of the Impact on Overcrowding

The study assessed the perceived adequacy of the house, the number of persons sharing a room, and the perceived role of the IUHP and BiP: PUP projects. The study established that the sample project beneficiaries lived in houses with a mean of 1.98 ± 0.987 rooms inclusive of sleeping, living, and kitchen areas. In addition, there was a mean of 5.52 ± 3.191 persons living in each house. The number of rooms (1.98 ± 0.987) and the number of persons living in a house (5.52 ± 3.191) translated into a mean of 3.78 ± 1.617 persons sharing a room. The study considered the mean of 3.78 persons sharing a room to be above the recommendation by UN-Habitat (2003) of not more than three persons sharing a habitable room for comfortable family life. This suggests overcrowding or insufficient living area. From field observations, the size of houses and rooms varied with majority of them being too small and congested, especially for sleeping. The respondents varied in their perception of the adequacy of their house to accommodate all members of the household as summarized in Table 4.7.30.

Table 4.7.30

Perceived Adequacy of the Houses of the Sample Project Beneficiaries

		Project		
		IUHP	BiP: PUP	Total
House adequacy	Yes	38 (46.3%)	122 (43.9%)	160 (44.4%)
	No	44 (53.7%)	156 (56.1%)	200 (55.6%)
Total		82	278	360

Information in Table 4.7.30 shows that 44.4% of the sample project beneficiaries considered their houses as adequate to accommodate all the members. The remaining 55.6% of the respondents perceived their houses as inadequate to accommodate all the members of the household, especially at night. The respondents observed that this situation denied occupants the right to privacy and freedom of movement needed for a comfortable and satisfactory family life. These findings about overcrowded houses were similar to observations by Achieng (2009) (as cited in Cronin & Guthrie, 2011) in the Silanga area of Kibera slum in Nairobi City, Kenya. Achieng observed that majority of the houses were crowded and denied members, especially adults, the freedom of movement and the right to privacy.

This study further determined how the 200 respondents who lived in overcrowded houses coped with the situation. The study established that 74.0% (148) of them had adapted to the available size of the rooms. Some of them partitioned the available space (rooms) using pieces of clothes, cartons or wood, to accommodate all members especially at night, and create a semblance of privacy. Others converted the same room used as a living area during the day into a sleeping area at night to accommodate all members. The remaining 26.0% (52) used their strong social networks in the community to secure sleeping space from neighbours living in less congested houses. This was common among respondents from households with teenage children. These findings of coping with overcrowding confirmed observations from previous studies. For example, some slum dwellers opt for smaller and cheaper rental houses to reduce expenditure (Hossain, 2005), while others use their social capital to split their families and send children out to relatives, friends, and/or neighbours (Meikle, 2002).

From the perceived adequacy of the houses, the respondents were asked about the perceived role of the IUHP and BiP: PUP projects in reducing overcrowding. Table 4.7.31 presents a summary of their perceptions.

Table 4.7.31

Perceived Role of the Study Projects in Reducing Overcrowding

		Project		Total
		IUHP	BiP: PUP	
Role of the project	Yes	39 (47.6%)	41 (14.7%)	80 (22.2%)
	No	43 (52.4%)	237 (85.3%)	280 (77.8%)
Total		82	278	360

Information in Table 4.7.31 shows that 22.2% (80) of the sample project beneficiaries reported that the two projects played a role respondents acknowledged in reducing overcrowding in their houses. The study established that all the 80 respondents were beneficiaries of the low-cost housing from the two projects using ABTs, which allowed them to construct structurally quality houses. The 80 respondents summarized the specific roles of the two projects in reducing overcrowding (Table 4.7.32).

Table 4.7.32

Specific Perceived Roles of the Study Projects in Reducing Overcrowding

Role	IUHP		Total sample	
	IUHP	BiP: PUP	Frequency	%
Promotion of low cost ABTs	17(43.6%)	25(61.0%)	42	52.5
Formation of saving groups	13(33.3%)	8(19.5%)	21	26.3
Technical guidance on required standards	9(23.1%)	8(19.5%)	17	21.3
Total	39	41	80	100.0

Information in Table 4.7.32 shows that 52.5% (42) of the sample project beneficiaries reported the promotion of low-cost ABTs, which enabled them to construct affordable and structural quality houses. The respondents observed that expensive technologies contributed to the high cost of house construction in the pre-project period. However, the two projects prioritized low-cost ABTs as a way of lowering the cost of construction and producing structural quality houses. In addition, 26.3% (21) of the respondents reported that the two projects encouraged the formation of saving groups, which provided access to affordable credit to buy land and/or build

standard houses. Lastly, 21.3% (17) of the respondents observed that ITDG-EA assigned a technical team to supervise construction of houses using low-cost ABTs. The team also provided critical technical guidance to local artisans on the required regulations and standards for a structural quality house. The respondents observed that promotion of low cost ABTs, formation of saving groups and provision of technical guidance on required standards allowed them to construct spacious and quality houses that comfortably accommodated their members.

The sample project beneficiaries were asked to rate their perceived overall impact of the two projects on reducing overcrowding by comparing the pre-project and post-project periods. The rating was a five-point Likert scale ranging from 0 to 4 as described in Section 3.7. Table 4.7.33 summarizes the respondents' perceived ratings of the overall impact of the IUHP and BiP: PUP projects on reducing overcrowding.

Table 4.7.33

Perceived Impact of the Projects on Reducing Overcrowding

		Project		Total
		IUHP	BiP: PUP	
The overall impact of the project	No	43(52.4%)	237(85.3%)	280(77.8%)
	Low	2(2.4%)	3(1.1%)	5 (1.4%)
	Average	8(9.8%)	3(1.1%)	11 (3.1%)
	High	19(23.2%)	27(9.7%)	46 (12.8%)
	Very high	10(12.2%)	8 (2.9%)	18 (5.0%)
Total		82	278	360

Information in Table 4.7.34 indicates that that 52.4% (43) of the sample project beneficiaries from the IUHP and 85.3% (237) from BiP: PUP project perceived no impact of the two projects in reducing overcrowding. In addition, 23.2% (29) and 12.2% (10) of the respondents from the IUHP perceived high and very high impact, respectively. Similarly, to 9.7% (27) and 2.9% (8) of those respondents from the BiP: PUP project perceived high and very high impact, respectively. A combined 12.8% (46) and 5.0% (18) of the respondents perceived the impact of the two projects as high and very high, respectively, in reducing overcrowding. However, the study

attributed variations between the two projects in individual rating to the ability of an individual beneficiary to fulfill the set conditions.

The 80 beneficiaries of low-cost housing reported that the two projects implemented several measures to sustain reduction in overcrowding. The study established that 62.5% (50) of them embraced the low-cost ABTs in the construction of structurally quality and sizeable housing. The remaining 37.5% (30) obtained legal ownership of their house/land, which encouraged investment in and improvement of the houses to accommodate members of the household. However, the respondents observed that the two projects encountered several challenges in sustaining reduction of overcrowding as summarized in Table 4.7.34.

Table 4.7.34
Challenges of the Projects in Sustaining Reduced Overcrowding

Challenge	Frequency	%
Limited finances	22	27.5
High poverty levels	16	20.0
Discriminatory determination of house beneficiaries	15	18.8
Increased population	15	18.8
Stalled, stolen, and spoilt machines	7	8.8
Lack of house/land ownership	5	6.3
Total	80	100.0

Information in Table 4.7.34 summarizes the leading challenges to include limited finances (27.5%), high levels of poverty (20.0%), discriminatory determination of house beneficiaries (18.8%), and increased population (18.8%). In addition, we had stalled, stolen, and spoilt machines (8.8%) and a lack of house/land ownership (6.3%). The respondents reported that high poverty levels and lack of finances limited their ability to afford construction or renting of houses with sufficient living areas. The increased population had contributed to increased pressure on the available land and thereby increasing its prices beyond the reach of a majority of the residents. Respondents considered the criteria used to determine the beneficiaries of the low-cost housing using ABTs as discriminatory and unfair. The study also established that most of

the SSB machines from the project were stalled, stolen, or spoilt. This had limited the continued adoption of the low-cost ABTs in the project sites.

4.7.6 Overall Beneficiary Perception of the Impact on the Living Conditions

From sub-sections 4.7.1 through 4.7.5, the respondents rated their perceived impact of the two projects on each of the five key characteristics of a slum settlement on a five-point Likert scale ranging from 0 to 4 as described in Section 3.7. The scale represented a continuum from no impact to very high impact, where 0 indicated no impact (NI), 1 indicated low impact (LI), 2 indicated average impact (AI), 3 was high impact (HI) and 4 indicated very high impact (VHI). The rating included the perceived impact of the projects on improved access to water (Table 4.7.6), improved access to sanitation (Table 4.7.14), improved structural quality housing (Table 4.7.21), improved security of tenure (Table 4.7.27) and reduced overcrowding (Table 4.7.33). The study converted these tables into one representing the overall perceived impact of the two projects on the living conditions in the study area as summarized in Table 4.7.35.

Table 4.7.35

Perceived Impact on the Living Conditions

	Rating (%)					Project						Total sample	
						IUHP			BiP: PUP				
	NI	LI	AI	HI	VHI	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.
Perceived impact													
Improved access to water	20.0	2.2	6.1	28.6	43.1	0.60	1.206	3.35	0.914	2.73	1.520		
Improved access to sanitation	33.9	10.3	10.0	33.9	11.9	1.98	1.423	1.74	1.516	1.80	1.497		
Improved structural quality housing	77.8	4.2	5.0	7.5	5.6	1.24	1.552	0.40	1.013	0.59	1.209		
Improved security of tenure	77.8	2.8	6.1	8.9	4.4	1.33	1.508	0.38	0.993	0.59	1.197		
Reduced overcrowding	77.8	1.4	3.1	12.8	5.0	1.40	1.586	0.44	1.096	0.66	1.287		
N						82		278		360			

Information in Table 4.7.35 indicates that the sample project beneficiaries varied in their perceptions of the impact of the two projects across the five key characteristics of a slum settlement. The respondents from the IUHP rated their perceived impact in the following order: improved access to sanitation (1.98±1.423), reduced overcrowding (1.40±1.586), improved security of tenure (1.33±1.508), improved structural quality housing (1.24±1.552), and improved access to water (0.60±1.206). Similarly, the respondents from the BiP: PUP project rated their perceived impact in the following order: improved access to water (3.35±0.914), improved access to sanitation (1.74±1.516), reduced overcrowding (0.44±1.096), improved structural quality housing (0.40±1.013), and improved security of tenure (0.38±0.993). The study attributed the variations in the rating across projects to the success of individual interventions in the two secondary cities. For example, there was limited access to water in Nakuru due to reliance on water supply from the local authority compared to Kitale where the project took advantage of the availability of natural sources of water. Similarly, the study attributed the low rating of security of tenure in Kitale to the fact that the project prioritized joint housing than individual houses.

From the above individual ratings, the study aggregated the individual scores of the perceived impact on all the five key characteristics of a slum settlement into a composite index score known as a living conditions index score. The higher the index score, the higher was the perceived level of impact of the two projects on the living conditions in the selected slum settlements, and vice versa. The index score ranged from a value of 0 indicating no impact to 20, indicating very high impact⁷. The index score had a reliability coefficient of $\alpha = 0.712$ with a mean of 6.36±4.019. The study transformed the index score into four ordinal categories namely a score of 0 (no impact), a score of 1-7 (low impact), a score of 8-13 (average impact), and a score of 14-20 (high impact). Table 4.7.36 summarizes the overall perceived level of impact of the two projects.

⁷ $5 \times 0 = 0$ (No impact)
 $5 \times 2 = 10$ (Average/moderate impact)
 $5 \times 4 = 20$ (High impact)

Table 4.7.36

Perceived Overall Impact of the Projects on Living Conditions

		Project		Total
		IUHP	BiP: PUP	
Level of impact	No	8 (9.8%)	4 (1.4%)	12 (3.3%)
	Low	40 (48.8%)	221 (79.5%)	261 (72.5%)
	Average	28 (34.1%)	26 (9.4%)	54 (15.0%)
	High	6 (7.3%)	27 (9.7%)	33 (9.2%)
Total		82	278	360

Information in Table 4.7.36 indicates that the sample project beneficiaries varied in their overall perception of the impact of the two projects on improving the living conditions in the study areas. For the IUHP, 9.8% (8) of the respondents perceived no impact, 48.8% (40) had low impact, 34.1% (28) had average impact while 7.3% (6) had high impact. For the BiP: PUP project, 1.4% (4) of the respondents perceived no impact, 79.5% (221) had low impact, 9.4% (26) had average impact while 9.7% (27) had high impact. A combined 3.3% (12) of the respondents recorded no impact, 72.5% (261) had low impact, 15.0% (54) had average impact while 9.2% (33) had high impact.

The findings suggests that although majority of the sample project beneficiaries in two projects perceived a low impact on the living conditions, a large proportion (41.4%) of the respondents from the IUHP recorded at least average impact compared to 19.1% of those from BiP: PUP project. The study attributed to variations to the differences in the delivery models of the two projects and the level of deprivation (poverty) between the two cities. The guaranteed direct individual benefits from the IUHP enabled the respondents to develop a positive perception of the impact of the interventions compared to BiP: PUP project where majority of the interventions prioritized the community before trickling down to individual beneficiaries. In addition, Nakuru was the fourth largest urban area in the country in terms of population and socio-economic indicators compared to Kitale. As a result, the level of vulnerability in Kitale was higher than that of Nakuru, which influences the impact of the slum upgrading interventions adopted (GoK, 2000b).

The study further established whether there was any significant difference in the perceived impact of the two projects on the living conditions across the two projects. Thus, study operationalized objective four using the fourth null hypothesis, which stated that: “there was no statistically significant difference in the perception of the beneficiaries about the impact of slum upgrading on the living conditions of slum settlements between the two projects.” The study used the Independent Samples t-test to determine whether there was a significant difference in the living conditions index score between the two independent samples (IUHP and BiP: PUP project).

As a parametric test, the common underlying assumptions of the Independent Samples t-test included scale of measurement, independence of observations, normal distribution of the dependent variable, homogeneity (homoscedasticity) of variances, and no significant outliers in the data set. In this study, the dependent (test) variable was a continuous (interval) variable measured in the actual scores (perceived living conditions index score), while the independent (grouping) variable was a nominal variable (the two projects – IUHP and BiP: PUP project). The study drew observations from beneficiaries of two independent projects. The study tested for the normality of the dependent variable (perceived living conditions index score) using the Q-Q Plot, which revealed a normal distribution of the mean scores for both groups (the two projects). The Levene's Test for Equality of Variances given by $F = 22.056$, $p = 0.126$ indicated homoscedasticity of variance. Since p value (0.126) was greater than 0.01 significance level, the study treated the group variances as equal. Therefore, the study established non-violation of any of the assumptions, which made the Independent Samples t-test suitable to determine significant difference in the perceived living conditions index score between the two projects at 0.01 significance level. Table 4.7.37 summarizes the output of the Independent Samples t-test.

Table 4.7.37

Comparing the Perceived Impact on Living Conditions across Projects

Stage	Project	N	Mean	Std.	T	Df	Sign.
				Dev.			(2-tailed)
Perceived living conditions index score	IUHP	82	6.55	4.782	.474	358	.636
	BiP: PUP	278	6.31	3.773			

Table 4.7.37 indicates that the IUHP recorded a higher perceived living conditions index score of 6.55 ± 4.782 compared to BiP: PUP, which had a mean score of 6.31 ± 3.773 . The small difference in the mean score (0.239) suggests that the sample project beneficiaries had almost similar perception of the impact of the two projects on the living conditions in their settlement 15 years after implementation. This is supported by $t(358) = 0.474$, $p(0.636) > 0.01$ significance level. Since $p(0.636) > 0.01$ significance level, the fourth null hypothesis is rejected suggesting no statistically significant difference in the perception of the beneficiaries about the impact of slum upgrading on the living conditions of slum settlements between the two projects. This suggests that the impact of slum upgrading depends on the perceptions of an individual beneficiary from the implemented interventions regardless of the project and delivery model adopted.

4.8 Perceived Impact on Livelihoods of the Project Beneficiaries

Objective five assessed the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the living conditions in the selected slum settlements. Previous studies indicate that successful slum upgrading should go beyond physical improvement of the living conditions and include strengthening of the livelihood strategies and increasing positive livelihood outcomes as the root cause of slum settlement. The study assessed the perception of the project beneficiaries about the impact of the two projects on their livelihoods from two perspectives namely livelihood strategies and livelihood outcomes discussed in the subsequent subsections

4.8.1 Influence of the Projects on the Livelihood Strategies of the Beneficiaries

The sample project beneficiaries were asked whether their current livelihood strategies were in any way influenced by the activities and interventions of the two projects. Table 4.8.1 summarizes the views of the respondents.

Table 4.8.1

Influence of the Projects on the Livelihood Strategies of Beneficiaries

		Project		Total
		IUHP	BiP: PUP	
Influence of the Projects on livelihood strategies	Yes	57 (69.5%)	92 (33.1%)	149 (41.4%)
	No	25 (30.5%)	186 (66.9%)	211 (58.6%)
Total		82	278	360

Information in Table 4.8.1 indicates that 58.6% (211) of the sample project beneficiaries pursued livelihood strategies not directly related to the activities and interventions of the two projects. The respondents observed that they had adopted certain livelihood strategies prior the initiation of the two projects. However, they added that the activities of the two projects augmented and created an enabling environment that expanded their already existing livelihood strategies. For example, a 47-years old respondent and beneficiary of low-cost housing from the Lake View project site made the following observations about her livelihood strategies as summarized in Box 4.8.1:

Box 4.8.1: A Respondent with Livelihoods Unrelated to the IUHP

“I am a resident of Lake View area of Nakuru and a beneficiary of low cost housing from the IUHP. I was a small-scale trader and a secondary school teacher prior to the initiation of the project in this area. In the year 2000, ITDG-EA sought to improve access to low cost housing in this area through a project dubbed the IUHP. The NGO targeted a sample of residents to demonstrate construction of the low cost housing using ABTs in the form of SSBs and lattices. The NGO laid down a set of conditions for any potential beneficiary including legal ownership of land, willingness to follow construction standards and by-laws, and ability to raise at least 60.0% of the total cost of construction. Since I was living in a low quality house, I expressed interest and applied. Luckily, my application was successful. I am grateful to the IUHP for the technical and financial assistance that enabled me to construct this quality house. However, although I was a beneficiary of the low cost housing from the IUHP, I have maintained my main sources of livelihood, that is, teaching and small-scale trading.”

Interview on 17th October 2019, Lake View, Nakuru

The remaining 41.4% (149) of the sample project beneficiaries, including 69.5% (57) from the IUHP and 33.1% (92) from BiP: PUP project, reported that the two projects directly influenced their current livelihood strategies. The study attributed the variation in the proportion of the respondents from the two projects to the fact that majority of the activities of the IUHP targeted individual beneficiaries directly compared to BiP: PUP project that prioritized communal activities. As a result, the interventions of the IUHP directly influenced the livelihood strategies of the sample beneficiaries compared to the BiP: PUP project. The 149 respondents enumerated the specific livelihood strategies attributed to the two projects as summarized in Table 4.8.2.

Table 4.8.2

Beneficiaries' Livelihood Strategies Influenced by the Projects

Strategies	Project		Total sample	
	IUHP	BiP: PUP	Frequency	%
Diversified income generation opportunities	13(22.8%)	51(55.4%)	64	43.0
Enhanced skills development	15(26.3%)	11(12.0%)	26	17.4
Encouraged urban farming	5(8.8%)	21(22.8%)	26	17.4
Development and strengthening of social capital	14(24.6%)	4(4.3%)	18	12.1
Using housing as an anchor to pursue a livelihood	10(17.5%)	5(5.4%)	15	10.1
Total	57	92	149	100.0

Information in Table 4.8.2 indicates that the two projects contributed to the diversification of income generation opportunities (43.0%), enhanced skills development (17.4%), engagement in urban farming (17.4%), strengthening of social capital (12.1%), and a using house as an anchor to pursue livelihood (10.1%). Thus, the two projects made a significant contribution to the development of livelihood opportunities and strategies among the sample project beneficiaries. The study elaborated each of these livelihood strategies in the subsequent sub-sections.

4.8.1.1 Diversification of Income Generating Opportunities

The activities of the two projects diversified the economic opportunities of 22.8% (13) of the respondents from the IUHP and 55.4% (51) from BiP: PUP project. The respondents observed that one of the main objectives of the two projects was to promote IGAs as a strategy to improve incomes and access to low-cost housing. The projects initiated various activities, which provided diverse income-generating opportunities and improved local economies. The majority of the respondents benefited from more than one economic activity thereby expanding their income sources. For example, the IUHP in partnership with the MCN facilitated a women group to establish and operate the NAROKA community water project, which sold water in the neighbouring community. The group used the income generated from the water project to form a

saving group. The group used the proceeds from the saving groups and profit from the water project to buy a piece of land on the peri-urban areas, and subdivided the land among its 42 members. Some of the members reported using their plots of land to construct rental houses, while others engaged in commercial farming. In addition, the IUHP trained women groups in peanut butter making, baking, and waste recycling. From field observations, five women groups in the Bondeni project site were still engaged in baking and making peanut butter 15 years after the exit of ITDG-EA. All these activities provided income-generating opportunities, which diversified the sources of income among the respondents.

The two projects trained up to 50 local artisans and 35 youth groups in ABTs, especially in the production and utilization of SSBs and lattices, which they sold to generate incomes. The study interviewed 18 of the pioneer trained artisans who reported that the projects enhanced their skills in masonry using ABTs. The respondents observed that the knowledge and skills gained were still relevant and applicable as a source of income. The study established that majority of the youth groups trained in ABTs were also engaged in waste recycling, urban farming in addition to selling SSBs and lattices. From field observations, the study discovered that some of the beneficiaries of low-cost housing prioritized construction of commercial and residential rental housing units to generate income in addition to the other engagements such as operating small businesses.

Lastly, 23 respondents from the BiP: PUP project reported that improved access to water and sanitation enabled them to save on time and distance previously spent to fetch water from rivers. The respondents used the spared time to engage other IGAs such as urban farming, operating groceries, and food kiosks. The construction of the footbridge connecting Shimo-La- Tewa project site and the CBD of Kitale greatly improved spatial interaction, market opportunities, and the use of motorized transport. This opened up employment and income-generating opportunities in the project sites.

In summary, diversification of income generation opportunities provided multiple income sources, minimized vulnerability, and stabilized incomes among the respondents. These findings confirm observations from previous studies about IGAs and slum upgrading. For example,

households diversify their sources of income and livelihoods to reduce vulnerability to specific stresses and shocks (Farrington et al., 2001) and maintain a certain standard of living or survival (Owuor, 2003). The greater the diversity of the sources of income and livelihoods, the higher is the resilience to the shocks, trends, and seasonality conditions (Meikle, 2002).

4.8.1.2 Skills Development

Information in Table 4.8.2 indicates that the two projects facilitated skills development of 26.3% (15) of the sample project beneficiaries from the IUHP and 12.0% (11) from BiP: PUP project. For example, the respondents reported that ITDG-EA in partnership with Base Africa, Techno-Serve, and Word Bank Voucher Training Programme trained some of them in basic business management, bookkeeping, stock taking, and finance management. The ITDG-EA and Techno-Serve offered technical skills in food processing, ABTs, sanitation options, and waste recycling technologies. The respondents opined that the business and technical training was still relevant and applicable in running their businesses since the completion of the two projects. For example, a 47-years old female respondent and beneficiary of the BiP: PUP project in the Kipsongo project site observed that:

“I was part of the group that received basic business and finance training from ITDG-EA and Techno-Serve. This enabled me to borrow money from my savings group to start this retail shop 18 years ago. The proceeds from the retail shop enabled me to buy a plot, build this modest residential house and meet the basic needs for my family, and other dependents.”

The respondents also reported that the two projects introduced them to a saving culture as part of capacity building. The projects sensitized and created awareness about the formation and operation of saving groups to provide access to affordable credit. The ITDG-EA in partnership with other organizations trained members of the formed saving groups in basic business management skills and simple bookkeeping for proper record keeping and operation. Information from the FGDs indicates that some of the saving groups formed then were still active and offering credit facilities in the project sites in the two towns.

4.8.1.3 Engagement in Urban Farming

Information in Table 4.8.2 revealed that the two projects enabled 17.4% (26) of the sample project beneficiaries to own land or rent it in the peri-urban areas for farming. The study established that the two projects encouraged beneficiaries to form savings groups, which enabled them to buy land jointly or offered affordable credit for individuals to buy land. Some of the respondents who bought land engaged in farming activities within their compounds while others used their improved incomes to rent land for farming in the peri-urban areas. For example, the BiP: PUP project facilitated the establishment of a fish farming project in the Mitume area as part of the Tuwan Community Water and Sanitation Project.

The two projects in conjunction with various other stakeholders encouraged residents to form environmental groups to recycle waste. The biodegradable waste was recycled to form compost manure known as *mazingira* to improve soil fertility. The Twaweza Youth Group from the Bondeni project site used the proceeds from their saving group to buy a 5-acre piece of land in Lanet – a peri-urban area of Nakuru. The group used the *mazingira* manure to boost soil fertility for commercial crop farming and channeled the generated farm income to a common pool. This was in addition to free-range dairy farming within the residential area and poultry farming. A respondent from Twaweza Youth Group, who was also the leader of the group, reported that they had five cows and several chickens feeding on a free-range in the open spaces within the residential area and spending a night in a makeshift shelter along the road reserve.

The study also established that ITDG-EA sponsored a group of beneficiaries from the two projects for an exchange programme on waste recycling in Uganda. The programme focused was on recycling human waste and using the product to boost soil fertility. The respondents observed that ITDG-EA in conjunction with Techno-Serve trained women groups on the importance of kitchen gardens in their residential plots to boost food availability and generate incomes through the sale of the produce.

The respondents reported engaging in various types of farming enterprises including crop farming, livestock keeping, and mixed farming. The common food crops grown included assorted types of vegetables (such as kales - *sukuma wiki*, cabbage, spinach, onions, tomatoes,

etc.), maize, bananas, sugar cane, beans, and potatoes. The common livestock kept were poultry, goats, sheep, pigs, rabbits, and cattle. Plate 4.8.1a is an on-plot poultry farming project belonging to the Daima Usafi Self Help Group affiliated to the IUHP in the Lake View project site. Plate 4.8.1b shows on-plot mixed crop farming at the backyard of the residence of one of the beneficiary from Tuwan project site.



Plate 4.8.1a: On-Plot Poultry Farming in Lake View Project Site



Plate 4.8.1b: On-Plot Mixed Crop Farming in Tuwan Project Site

The study also established that the respondents varied in their purpose of farming, which included subsistence farming and commercial farming. A 42-years old female respondent from the Tuwan project site summarizes the benefits of urban farming as captured in Box 4.8.2.

Box 4.8.2: Benefits of Urban Farming in Tuwan Project Site

“ I bought this 0.5-acre plot of land in the year 2004 using my savings and credit from Mitume Women Welfare Group. Since then, I have been growing food crops (maize, beans and vegetables) and keeping livestock (cows, goats, sheep and poultry) on the plot. From this farm, my family gets fresh food supplies in sufficient quality and quantity. Currently, I am also milking one of my three cows. This has greatly reduced family expenditure on food. We only sell any excess supply to our neighbours. In addition, we use the farm remains to feed livestock and poultry. In the month of May this year (2019), we sold two young bulls to pay school fees of my two daughters who are now in their Third Year of studies in the University of Nairobi and Kenyatta University.”

Interview on 11th November 2019, Mitume Area, Kitale

From the above narrations, urban farming improved food availability, generated a source of income, and diversified livelihood options among the respondents. These findings affirmed observations by Owuor and Foeken (2006) and Owuor (2005) that urban farming in slum settlements is a source of income, food security, and survival strategy.

4.8.1.4 Strengthening of Social Capital

Information in Table 4.8.2 reveals that 12.1% (18) of the sample project beneficiaries reported that the two projects encouraged strengthening of social capital – the capacity of a group to work collectively to address and solve problems. The projects supported the respondents to form and strengthen local CBOs as a forum for mobilization, collaboration and networking with members of the local communities in articulating local needs and interests in the decision making processes, and engaging with other stakeholders. The projects formed strong partnerships with local CBOs as a platform for sharing of information and encouraging community participation in the process. This assisted in increasing the voice of the local community in engaging other stakeholders to address their local needs and challenges through the two projects. It also allowed the local community to articulate and negotiate for a common position with the external agencies in upgrading the settlements. The formed CBOs became a significant resource upon which the

community members developed and secured their livelihoods, a basic social safety net, and an important fallback mechanism in hard social and economic times. This enabled members to realize their potentials and boost their self-confidence.

The projects encouraged local CBOs to form saving groups, which allowed members to mobilize their limited financial resources by contributing as little as KES 100 per person per week to a common pool for accumulation and advancement of affordable credit. The respondents reported improved access to credit from the saving groups, which enabled them to invest in land, build their own houses, and/or engage in business. The local CBOs and saving groups also played a significant social and cultural role by encouraging members to bond, celebrate together in good times, and console each other in difficult times. An interview with a 52-year old Chairman of Tuwan Water and Sanitation Service Group in Kitale captured the importance of social capital as summarized in Box 4.8.3.

Box 4.8.3: Importance of Social Capital in the BiP: PUP Project

“... the local CBOs and saving groups affiliated to the BIP: PUP project have played a significant role in improving our well-being by enabling us to celebrate and mourn together as a community. During times of happiness, we attend wedding, new-born, birthday party and school graduation ceremonies together. Through the CBOs and saving groups, we are able to pool our limited financial resources together and share information for common and individual goals. For example, the Kisumu Ndogo Miti Moja Daraja (KIMIDA) saving group is still very active since the year 2002, and continues to encourage small-scale informal savings and credit activities. The group has more than 100 members who contribute at least KES 100 per week to a common pool. Members have access to credit for investment in land, house and business. In addition, the saving groups and CBOs provide social support during difficult times such as bereavement and sickness where members console and comfort each other.”

Interview on 24th October 2019

Venue: Tuwan Water and Sanitation Service Group Office

These views by the Tuwan Water and Sanitation Service Group underscore the critical economic, social and cultural role of social networks among slum dwellers that lacked access to official

social systems. The study established that ITDG-EA facilitated the saving groups and CBOs through capacity building to collaborate and form large bodies, namely the NAHECO for the IUHP and KIHECO for BiP: PUP project, as SACCOs for greater mobilization of resources and access to credit. However, only KIHECO was still operational 15 years after the exit of ITDG-EA, albeit operating at a limited level. Respondents reported that NAHECO collapsed because of poor leadership and mismanagement after the exit of ITDG-EA.

In summary, the respondents observed that the strong social networks and relations developed and built through CBOs and saving groups were an asset and a livelihood strategy for accessing material and financial resources. The local communities had witnessed great success in articulating and addressing common needs and challenges given the common potentials and strength of working in groups. These findings were in consonant with observations in previous studies that external agencies prefer using social relations and networks to implement slum upgrading (Muller & Mitlin, 2007; Satterthwaite, 2001) due to the absence of state-organized social security systems (Schütte, 2006). Social networks enable slum residents to develop skills to address social exclusion (Landaeta, 2004) by pooling resources and share information about their challenges and solutions (Schilderman, 2004). The saving schemes create a collective governance structure and a platform for identifying and addressing community problems (d’Cruz & Mudimu, 2013) and bring slum residents together as a starting point for slum upgrading (Muller & Mitlin, 2007). For example, there was a positive correlation between social capital and household welfare in slums in South Africa and Bolivia (ID21, 2000) and most job opportunities among the urban poor in Peru came from social networks (ITDG, 2001).

4.8.1.5 Housing as an Anchor for Pursuing Livelihood Strategies

Information in Table 4.8.2 indicates that 10.1% (15) of the respondents considered their low-cost houses from the two projects as a platform and reference point from where they operated while pursuing their livelihood strategies. The respondents reported that they operated from the safety of their houses as they ventured into various livelihood activities. They also retired to the same houses in the evening for shelter, privacy, protection, and security after a long day of engaging in outdoor livelihood activities. Thus, the respondents noted that a house was a social asset upon

which they built and strengthened their livelihood strategies. A house had a profound multiplier effect on their health, livelihoods, security, opportunities, general well-being, and quality of life.

The study established that 60.0% (9) of the 15 respondents regarded their house as a commodity with a market value that accommodated their IGAs and functioned as collateral to access credit. The remaining 40.0% (6) reported that their houses with secure tenure enabled them to access basic municipal utilities such as water, electricity, garbage collection, and sewerage. The respondents observed that the local authorities and government institutions such as Electricity Company gave priority to residents with secure tenure in the provision of basic utility services. Some respondents operated home-based enterprises from their houses. For example, women groups in the Bondeni project site operated their small businesses such as baking and peanut butter making from their houses. The respondents reported that working from home reduced their operational cost and allowed them time to engage in other domestic responsibilities. The respondents also observed that access to quality and durable low-cost housing had reduced their vulnerability to communicable diseases and improved their general well-being.

These findings about the role of housing as a facilitator of livelihood pursuits for slum residents corroborates findings from previous studies. Hendriks (2011), Kellett and Tipple (2002), and Meikle (2002) argued that a house is a productive, socio-cultural, and economic structure for the urban poor. In addition, Majale (2003), ITDG-EA (2003), and Majale and Albu (2001) observed that a house is a place to work from and to access markets and opportunities; ensure permanence of assets; collateral to raise credit; a source of income through rental or home-based enterprises; and a contributor to good health and productivity. Nahiduzzaman (2012) add that slum dwellers often use their houses as a base for home-based enterprises to raise income.

4.8.2 Perceived Impact of the Projects on Livelihood Outcomes of Beneficiaries

From literature review, positive livelihood strategies significantly influence positive and beneficial livelihood outcomes among beneficiaries. Therefore, from the conceptualization of the literature review, the study identified six basic livelihood outcomes related to slum upgrading including improved household income, food security, household health and socio-economic well-being, access to credit and security of tenure, and reduced vulnerability. The study asked

the respondents to rate their perceived impact of the two projects on the above six basic selected livelihood outcomes. The respondents based their rating on a comparison of the conditions of each of the above selected livelihood outcome in the pre-project period and post-project period. The rating was done on a five-point Likert scale ranging from 0 to 4 as described in Section 3.7. The scale represented a continuum from no impact to very high impact, where 0 indicated no impact (NI), 1 indicated low impact (LI), 2 indicated average impact (AI), 3 was high impact (HI) and 4 indicated very high impact (VHI). The respondents also provided a justification of their rating of each selected livelihood outcome. Table 4.8.3 summarizes the rating of the impact of the two projects on selected livelihood outcomes by the respondents.

Table 4.8.3

Rating of the Perceived Impact of the Projects on Livelihood Outcomes

	<i>Response (%)</i>					<i>IUHP</i>			<i>BiP: PUP</i>			<i>Total sample</i>		
	NI	LI	AI	HI	VHI	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
<i>The IUHP/BiP: PUP project ...</i>														
Reduced household vulnerability	58.6	1.9	8.6	14.4	16.4	2.39	1.679	0.95	1.465	1.28	1.629			
Improved household income	58.6	3.1	7.2	22.5	8.6	2.16	1.559	0.91	1.384	1.19	1.517			
Improved household food security	58.6	4.4	17.8	11.7	7.5	1.98	1.531	0.78	1.208	1.05	1.381			
Improved household well-being – quality of life in terms of health and socio-economic status	58.6	11.7	11.9	8.9	8.9	1.84	1.519	0.72	1.207	0.98	1.366			
Improved household access to credit	58.6	8.9	15.8	11.7	5.0	1.76	1.436	0.72	1.143	0.96	1.290			
Improved household security of tenure	58.6	12.5	13.3	13.3	2.5	1.80	1.383	0.61	1.002	0.88	1.207			
N						82		278		360				

Information in Table 4.8.3 indicates that the sample project beneficiaries varied in their perceptions of the impact of the two projects across the six selected livelihood outcomes. All the livelihood outcomes had a mean score above 0.000 suggesting some positive impact on the six selected livelihood outcomes. The respondents from the IUHP recorded a high mean score across all the six selected livelihood outcomes compared to their counterparts from the BiP: PUP project. The study attributed the positive impact to the role of the two projects in creating and strengthening diverse long-term positive livelihood strategies, which in turn contributed to positive and beneficial livelihood outcomes. The study discussed the rating of the livelihood outcomes as follows:

The sample respondents rated reduced vulnerability higher than all other livelihood outcomes with a mean score of $\bar{x} = 1.28 \pm 1.629$, including $\bar{x} = 2.39$ for the IUHP and $\bar{x} = 0.95$ for BiP: PUP project (Table 4.8.3). Respondents reported that the activities of the two projects enabled them to diversify their income-generating opportunities, which improved incomes and enhanced their purchasing power. They formed saving groups and strengthened social capital and networks cushioned them during hard economic times. In addition, improved access to low-cost housing minimized the threat of eviction, reduced incidences of diseases, and ensured improved well-being. The two projects also increased access to improved water and sanitation, which reduced incidences of water-borne and communicable diseases among the respondents. Thus, diversified IGAs, access to low-cost housing, formation of saving groups, strengthened social capital and increased access to improved water and sanitation significantly reduced the level of vulnerability among the respondents.

Improved household income was rated the second highest with a mean score of $\bar{x} = 1.19 \pm 1.519$, including $\bar{x} = 2.16$ for the IUHP and $\bar{x} = 0.91$ for BiP: PUP project (Table 4.8.3). Respondents reported that the main goal of the two projects was to improve access to low-cost housing through supporting IGAs. This created diverse income-generating opportunities, which improved local economic activities and disposable incomes. In addition, the two projects introduced a saving culture, which increased access to affordable credit for investment in IGAs.

Moreover, respondents rated improved food security with a mean score of $\bar{x} = 3.531.05 \pm 1.381$ including $\bar{x} = 3.821.98$ for the IUHP and $\bar{x} = 3.530.78$ for BiP: PUP project (Table 4.8.3). The respondents reported high food insecurity in terms of quality, quantity, access, and availability in the pre-project period. The study attributed the high food insecurity to the high levels of poverty and low incomes, which increased the vulnerability of the residents to changes in food availability and prices. However, the activities of the two projects enabled the respondents to diversify their IGAs, which increased incomes and food security. Some of the respondents used their plots of land for urban farming, which produced food for domestic consumption and generated income. To demonstrate this, a 69 years old male respondent from the Shimo-La-Tewa project site observed that:

“before ITDG-EA came to this area and started the BiP: PUP project, I had contemplated selling this plot of land to meet the increasing needs of my family. However, I was lucky to be one of the beneficiaries of the low-cost housing from the BiP: PUP project. Using the support from the project, I focused on construction of rental houses which generate income for domestic purposes and meeting other needs.”

The respondents also rated improved household well-being and underscored change in quality of life in terms of better health and socio-economic status with a mean score of $\bar{x} = 0.98 \pm 1.336$, including $\bar{x} = 1.84$ for the IUHP and $\bar{x} = 0.72$ for BiP: PUP project (Table 4.8.3). The respondents reported that the two projects had a significant positive change in the quality of their lives resulting from improved socio-economic conditions in terms of increased income, food security, access to credit and access to basic services. They reported that there was increased access to improved water and sanitation (see Tables 4.7.6 and 4.7.14), which in turn contributed to better health and socio-economic well-being by reducing incidences of water-borne and communicable diseases. Increased access to water enabled respondents to reallocate the time saved and engaged in other IGAs. In addition, the two projects supported improvement in the structural quality of housing (see Table 4.7.21), which reduced the susceptibility to diseases and illnesses. The introduction of a saving culture through formation of saving groups (see Table 4.5.1) increased access to credit, thus enabling members to buy land, construct homes, and initiate IGAs. Some respondents observed that improved security of tenure reduced the threats of eviction and increased access to basic municipal services (Table 4.7.27).

Information in Table 4.8.3 further indicates that improved household access to credit had a mean score of $\bar{x} = 0.96 \pm 1.290$ including $\bar{x} = 1.76$ for the IUHP and $\bar{x} = 0.72$ for BiP: PUP project. The respondents observed that the two projects encouraged a saving culture through the formation of saving groups and social networks where members pooled their meagre financial resources together for investment and provision of affordable credit. This was vital given the limited secure and reliable employment opportunities in the project sites. In addition, the saving groups strengthened the bond between members, which in turn strengthened social capital in the project sites.

Lastly, improved security of land tenure had a mean score of $\bar{x} = 0.88 \pm 1.207$, including $\bar{x} = 1.80$ for the IUHP and $\bar{x} = 0.61$ for BiP: PUP project (Table 4.8.3). Respondents reported that the two projects encouraged the formation of saving groups, which increased access to affordable credit to buy land and/or construct houses. Most of the saving groups prioritized buying joint land, which they later subdivided among the members. This reduced prices of land and the bureaucracy of getting title deeds. House and land ownership reduced cases of forced eviction and/or demolition of structures, which were previously pervasive during the pre-project period. Some of the respondents used their land and/or house as collateral to secure credit. Increased security of tenure triggered private investment in housing improvement, wealth production, and property development.

These findings about the beneficiaries' perceived impact of slum upgrading on livelihood outcomes corroborate observations by Beall and Kanji (1999) who opined that access to secure housing reduces vulnerability and improves the well-being of slum dwellers. In addition, access to water and sanitation enhances the health and socio-economic well-being of slum dwellers (Clasen, Bostoen et al., 2010; Clasen, Roberts et al., 2006; Waddington & Snilsveit, 2009), and allows residents to reallocate the time saved in collecting water to various productive IGAs (Aiga & Umenai, 2002). For example, the Kibera Slum Upgrading initiative linked the slum dwellers to credit institutions, which played an important role in empowering them to access housing finance (UN-Habitat, 2008).

From the above individual ratings, the study aggregated the individual scores of the perceived impact on all the selected six livelihood outcomes into a composite index score known as a livelihood outcome index score. The higher the index score, the higher was the perceived level of impact of the two projects on the livelihood outcomes among the sample project beneficiaries, and vice versa. The index score ranged from a value of 0 indicating no impact to 24, indicating very high impact⁸. The index score had a reliability coefficient of $\alpha = 0.793$ with a mean of 6.34 ± 7.837 . The study transformed the index score into four ordinal categories namely a score of 0 (no impact), a score of 1-8 (low impact), a score of 9-16 (average impact), and a score of 17-24 (high impact). Table 4.8.4 summarizes the overall perceived level of impact of the two projects on the livelihood outcomes.

Table 4.8.4
Perceived Overall Impact of the Project on Livelihood Outcomes

		Project		Total
		IUHP	BiP: PUP	
Overall impact	No	25 (30.5%)	186 (66.9%)	211 (58.6%)
	Average	20 (24.4%)	72 (25.9%)	92 (25.6%)
	High	37 (45.1%)	20 (7.2%)	57 (15.8%)
Total		82	278	360

Information in Table 4.8.4 indicates that the sample project beneficiaries varied in their overall perception of the impact of the two projects on improving the livelihood outcomes in the study areas. For the IUHP, 30.5 (25) of the sample project beneficiaries recorded no impact, 24.4% (20) had average impact, while 45.1% (37) had high impact. For the BiP: PUP project, 66.9% (186) of the respondents recorded no impact, 25.9% (72) had average impact, while 7.2% (20) had high impact. A combined 58.6% (211) of the respondents recorded no impact, 25.6% (92) had average impact while 15.8% (57) had high impact.

⁸ $6 \times 0 = 0$ (No impact)
 $6 \times 2 = 12$ (Average/moderate impact)
 $6 \times 4 = 24$ (High impact)

The findings indicate that 41.4% of the sample respondents reported a positive impact of the two projects on their livelihood outcomes. Specifically, 45.1% of the sample project beneficiaries from the IUHP and 7.2% of from BiP: PUP perceived a high impact of the two projects on the livelihood outcomes. As earlier observed, that majority of the activities of the IUHP directly targeted individual respondents, which encouraged more diverse positive livelihood strategies. In contrast, the BiP: PUP project focused more on joint activities targeting the entire community with the benefits expected to spill over to individual beneficiaries. Therefore, the guaranteed direct individual benefits from the IUHP enabled the respondents to develop a positive perception of the impact of the interventions on the livelihood outcomes compared to BiP: PUP project. The findings indicate that the two projects encouraged adoption of diverse and positive livelihood strategies that built a strong asset base as a buffer against shocks and stresses in the settlements. This resulted in positive livelihood outcomes that reduced the level of vulnerability and increased household income, food security, health and socio-economic well-being, access to credit, and security of tenure among the respondents.

The study further established whether there was any significant difference in the perceived impact of the two projects on the livelihood outcomes across the two projects. Thus, study operationalized objective five using the fourth null hypothesis, which stated that: “there was no statistically significant difference in the perception of the beneficiaries about the impact of slum upgrading on the livelihoods of slum dwellers between the two projects.” The study used the Independent Samples t-test to determine whether there was a significant difference in the livelihood outcomes index score between the two independent samples (IUHP and BiP: PUP project).

As a parametric test, the common underlying assumptions of the Independent Samples t-test included scale of measurement, independence of observations, normal distribution of the dependent variable, homogeneity (homoscedasticity) of variances, and no significant outliers in the data set. In this study, the dependent (test) variable was a continuous (interval) variable measured in the actual scores (overall perceived impact index score for the livelihood outcomes), while the independent (grouping) variable was a nominal variable (the two projects – IUHP and BiP: PUP project). The study drew independent observations from beneficiaries of two projects.

The study tested for the normality of the dependent variable (perceived livelihood outcomes index score) using the Q-Q Plot, which revealed a normal distribution of the mean scores for both groups (the two projects). The Levene's Test for Equality of Variances given by $F = 8.479$, $p = 0.054$ indicated homoscedasticity of variance. Since p value (0.054) was greater than 0.01 significance level, the study treated the group variances as equal. Therefore, the study established that non-violation of the assumptions, which made the Independent Samples t-test suitable to determine significant difference in the perceived livelihood outcomes index score between the two projects at 0.01 significance level. Table 4.8.5 summarizes the output of the Independent Samples t-test.

Table 4.8.5
Comparing the Perceived Impact on Livelihood Outcome across Projects

Stage	Project	N	Mean	Std. Dev.	T	Df	Sign. (2-tailed)
Perceived livelihood outcome index score	IUHP	82	11.93	8.334	7.955	358	.000
	BiP: PUP	278	4.69	6.880			

Table 4.8.5 indicates that the IUHP recorded a higher perceived livelihood outcome index score for the livelihood outcomes of (11.933 ± 8.334) compared to that of the BiP: PUP project (4.69 ± 6.880) . The findings indicates a huge big difference in the mean score between the two project (7.233), which suggests that the adopted livelihood strategies from the activities of the IUHP had a greater impact on the livelihood outcomes of the respondents. In contrast, the communal interventions adopted by the BiP: PUP project took longer to influence the livelihood outcomes of the individual beneficiaries. This is supported by $t(358) = 7.955$, $p(0.000) < 0.01$ significance level. Since $p(0.000) < 0.01$ significance level, the fifth null hypothesis is rejected which suggests a statistically significant difference in the perception of the beneficiaries about the impact of slum upgrading on the livelihoods of slum dwellers between the two projects. This suggests that the perceptions of the impact of slum upgrading on the livelihood outcomes depend on the type of intervention and delivery model adopted. Interventions that targets individual beneficiaries directly were more likely to have a great impact compared to joint interventions whose impact may take a long time to be trickle down to individual beneficiaries.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the key research findings of the study, conclusions, and recommendation. The broad objective of this study was to assess the beneficiaries' perception of the post-implementation stages and sustainability of slum upgrading in secondary cities using case studies of the IUHP in Nakuru and BiP: PUP project in Kitale, Kenya. Specifically, the study sought:

- i) To assess the level of community participation in the post-implementation monitoring and evaluation, and maintenance of the IUHP and BiP: PUP projects as perceived by the project beneficiaries.
- ii) To assess the level of sustainability of the IUHP and BiP: PUP projects implemented 15 years ago as perceived by the project beneficiaries.
- iii) To determine the influence of community participation in the post-implementation monitoring and evaluation, and maintenance on sustainability of the IUHP and BiP: PUP projects through the perceptions of project beneficiaries.
- iv) To assess the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the living conditions in the selected slum settlements.
- v) To assess the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the livelihoods in the selected slum settlements.

The study collected primary and secondary data on various aspects addressing the five specific objectives of the study. The study collected primary data using a semi-structured questionnaire, key in-depth interviews (KII), Focus Group Discussion (FGD), and field observation. The study selected a sample of 392 respondents namely 365 project beneficiaries, two County Urban Development Officers, one Project manager from ITDG-EA and 24 officials of local CBOs. The study also collected secondary data from existing relevant documented sources about the topic under review including official documents of the two projects, and any other relevant existing literature.

5.2 Summary of the Key Findings

Based on the specific objectives of the study, the following are the key findings of the study:

5.2.1 Community Participation in Post-Implementation Stages

The study established that close to a half (54.4) of the sample project beneficiaries, including 74.4% from the IUHP and 48.6% from BiP: PUP project, were aware of the post-implementation monitoring and evaluation, with majority (80.6%) of them involved in the process. As primary consumers, 60.1% of these beneficiaries, including 83.7% from the IUHP and 49.5% from BiP: PUP project, perceived high (active) participation in monitoring and evaluating of the progress and impact of the implemented interventions. The beneficiaries tracked the progress, assessed real impact, made decisions, and took corrective measures from the lessons learnt. This encouraged them to assume ownership and responsibility of the projects and ensured long-term benefits even after the exit of the external agencies. The beneficiaries had shared and full control over the content, process, and results and take corrective actions and measures in the post-implementation monitoring and evaluation.

Similarly, more than a half (62.8%) of the sample project beneficiaries, including 53.7% from the IUHP and 64.4% from BiP: PUP project, were aware of the post-implementation maintenance of the two projects with majority (84.5%) of them involved in the process. As a result, 52.9% of these beneficiaries, including 72.1% from the IUHP and 47.3% from BiP: PUP project, perceived high (active) participation in maintaining their guaranteed benefits from the implemented interventions 15 years after completion. The study attributed this to clarity in the roles and responsibilities of the sample project beneficiaries through capacity building and empowerment. The beneficiaries were aware of who does what, when, where, and how in the maintenance of the two projects.

The study established that the two projects adopted different delivery models in implementing majority of its activities of their interventions. The IUHP used an individual approach by directly targeting and benefiting individual beneficiaries. This intrinsically motivated and encouraged higher beneficiary participation to safeguard the guaranteed individual benefits. The respondents demonstrated ownership, responsibility and commitment, which contributed to the perceived

high participation in post-implementation monitoring and evaluation, and maintenance. This was in contrast with the BiP: PUP project, which used a communal approach that prioritized activities targeting the larger community with benefits expected to trickle down to individual members over time. This resulted in variations in the intrinsic motivation to participate in the post-implementation stages. As a result, the IUHP recorded a higher community participation index mean score of 20.88 ± 2.713 for the post-implementation monitoring and evaluation compared to BiP: PUP, which had a mean score of 17.53 ± 3.910 . This variation was supported using the *t*-values, including $t(156) = 5.426$, $p(0.000) < 0.01$ significance level for post-implementation monitoring and evaluation and $t(189) = 3.610$, $p(0.000) < 0.01$ significance level for post-implementation maintenance in the two projects. Since $p(0.000) < 0.01$ significance level, reject the null hypothesis one and conclude that there was a statistically significant difference in the level of community participation in the post-implementation monitoring and evaluation, and maintenance between the two projects as perceived by the project beneficiaries.

5.2.2 Evaluation of Sustainability of the IUHP and BiP: PUP Projects

The study established that the two projects implemented multiple physical, social, economic and environmental interventions with diverse and non-mutually exclusive benefits to the sample project beneficiaries. The study adopted the three dimensions to assess the perceived sustainability of the two project namely project longevity (project sustainability), long-term impact to individual beneficiaries (personal sustainability), and long-term impact on the entire community (community sustainability). The three dimensions reflected the continuity and maintenance of the two projects 15 years after implementation and withdrawal of the funding NGO. The study established that the sample project beneficiaries had a positive perception of the continuity and maintenance of the activities and benefits of the two projects over the years. Specifically, there was continuous improvement in the living conditions and livelihoods, and progress in meeting the objectives of the two projects over the years. The projects had contributed to continuous improvement in capacity building, empowerment and well-being of the beneficiaries; and enhancement of the social capital and empowerment of the local community to harness the momentum for future development. On the overall, 51.2% of the sample project beneficiaries from the IUHP and 35.3% from BiP: PUP project perceived high sustainability of the project at least 15 years after completion. However, the IUHP recorded a higher sustainability

index mean score of 20.80 ± 6.593 compared to the BiP: PUP mean score of 19.10 ± 5.298 . The small difference in the mean score underscores the influence of the delivery model in implementation of on sustainability. Project beneficiaries were more likely to be motivated to continue and maintain projects whose interventions with direct and individual benefits. This influences ownership and responsibility of the post-implementation period and sustainability of the interventions. This difference was further supported by the Independent Samples t-test with $t(358) = 2.419, p(0.016) < 0.05$ significance level suggesting that there was a statistically significant difference in the level of sustainability of slum upgrading between the two projects as perceived by the project beneficiaries.

5.2.3 Post-Implementation Stages and Sustainability of Slum Upgrading

The study established that there was a statistically significant and strong positive correlation between community participation in the post-implementation monitoring and evaluation and sustainability of the two projects ($r = 0.757, p\{0.000\} < 0.01$); and community participation in the post-implementation maintenance and sustainability of the two projects ($r = 0.803, p\{0.000\} < 0.01$). Thus, an increase or a decrease in community participation in the two post-implementation stages would lead to an increase or a decrease in the level of sustainability of the two projects. The study attributed the relationship to the critical role of the post-implementation monitoring and evaluation, and maintenance in ensuring continuity and maintenance of the activities and benefits of slum upgrading beyond the project period. This encouraged the beneficiaries to take control of the two projects, track the progress, participate in decision making as well as take corrective measures by implementing lessons learnt. This contributed to sustainability of the two projects 15 years after completion and exit of the funding NGO.

The study established that community participation in the two post-implementation monitoring and evaluation, and maintenance collectively contributed and accounted for 75.4.0% of the changes in the sustainability of the two projects ($R^2_{adj} = 0.754$). The remaining 24.6% of changes in the sustainability of the two projects to the other variables other than the two post-implementation monitoring and evaluation, and maintenance used in this study. Further, the study established that community participation in the two post-implementation stages varied in their contribution to the combined 75.4% of the change in sustainability of the two projects.

Community participation in the post-implementation maintenance contributed 67.3% ($R^2_{adj} = 0.673$), while community participation in the post-implementation stage of monitoring and evaluation contributed to the remaining 78.1% ($R^2_{adj} = 0.081$). The derived regression model, that is $y = -0.417 + 0.550x_1 + 0.395x_2 + e$, was statistically significant in predicting the influence of community participation in the two post-implementation stages on sustainability of the two projects ($F_{2,120} = 187.807$ p {0.000} < 0.01). Therefore, community participation in the post-implementation monitoring and evaluation, and maintenance had a statistically significant influence on sustainability of the two projects as perceived by the project beneficiaries. Further, the derived regression model suggest that lack of community participation in the post-implementation monitoring, evaluation, and maintenance would result in a negative influence on sustainability of the two projects.

5.2.4 Perceived Impact of the IUHP and BiP: PUP Projects on Living Conditions

The study assessed the perceived impact of the two projects by the extent to which they addressed inadequate access to improved water, inadequate access to improved sanitation, poor structural quality housing, insufficient living area (overcrowding), and lack of security of tenure in the project sites. The study established that 96.8% of the sample beneficiaries from the BiP: PUP project and 23.2% from IUHP reported that the two projects played a significant role in improving access to water by increasing water supply, and reducing time, cost and distance burden of collection. However, 54.7% (152) of the sample project beneficiaries from the BiP: PUP project perceived a very high impact on improving access to water, while 76.8% (63) from IUHP perceived no impact.

The two projects played a significant role in improving access to sanitation as reported by 75.6% (62) of the sample project beneficiaries from the IUHP and 63.3% (176) from BiP: PUP project. The project constructed sanitation blocks, refuse transfer chambers and biocentres, conducted sensitization and awareness campaigns, and recycled waste. The study established that 30.5% and 14.6% of the sample project beneficiaries from the IUHP perceived the impact as high and very high, respectively. Similarly, 34.9% and 11.2% of the sample project beneficiaries from the BiP: PUP project perceived the impact as high and very high, respectively.

The study established that only 22.2% of the sample project beneficiaries, including 47.7% (39) from the IUHP and 14.7% (41) from BiP: PUP project, reported that the two projects played a significant role in improving the structural quality of housing, tenure security and reduced overcrowding. The projects promoted low cost ABTs, access to affordable credit through savings groups, training of local artisans, and provision of partial financing. The study attributed the relatively low proportion of the respondents to the poverty levels and stringent conditions that determined beneficiaries of low-cost housing. For structural quality housing, 23.2% and 8.5% of the sample project beneficiaries from the IUHP perceived high and very high impact, respectively. Similarly, to 4.7% and 3.2% of those respondents from the BiP: PUP project perceived high and very high impact, respectively. For improved security of tenure, 23.2% and 8.5% of the sample project beneficiaries from the IUHP perceived high and very high impact, respectively. Similarly, to 4.7% and 3.2% (9) of those respondents from the BiP: PUP project perceived high and very high impact, respectively. Lastly, for reduced overcrowding, 23.2% and 12.2% of the respondents from the IUHP perceived high and very high impact, respectively. Similarly, to 9.7% and 2.9% of those respondents from the BiP: PUP project perceived high and very high impact, respectively.

On the overall, the sample project beneficiaries varied in their perceptions of the impact of the two projects across the five key characteristics of slum settlement. Thus, for the IUHP, 9.8% (8) of the respondents perceived no impact, 48.8% (40) had low impact, 34.1% (28) had average impact while 7.3% (6) had high impact on the living conditions. For the BiP: PUP project, 1.4% (4) of the respondents perceived no impact, 79.5% (221) had low impact, 9.4% (26) had average impact while 9.7% (27) had high impact on the living conditions. A combined 3.3% (12) of the respondents perceived no impact, 72.5% (261) had low impact, 15.0% (54) had average impact while 9.2% (33) had high impact on the living conditions. The variations in the perceived impact was further supported by the Independent Samples t-test with $t(358) = 0.474$, $p(0.636) > 0.01$ significance level. This shows that there was no statistically significant difference in the perception of the beneficiaries about the impact of slum upgrading on the living conditions of slum settlements between the two projects.

5.2.5 Perceived Impact of the IUHP and BiP: PUP Projects on Livelihoods

The study established that the two projects directly influenced diverse positive livelihood strategies of 69.5% of the sample project beneficiaries from the IUHP and 33.1% from BiP: PUP project. The projects diversified income generation opportunities; enhanced skills development; encouraged urban farming; strengthened social capital; and use a housing as an anchor to pursue a livelihood. These diverse positive livelihood strategies enabled the respondents to build a strong asset base as a buffer against the shocks and stresses in the selected slum settlements. This resulted in positive livelihood outcomes that reduced the level of vulnerability and increased household incomes, food security, health and socio-economic well-being, access to credit, and security of tenure among the respondents. The respondents' perceived impact of the projects on each of these livelihood outcomes varied across the two projects. On the overall, 24.4% and 45.1% of the sample project beneficiaries from the IUHP perceived average and high impact on the livelihood outcomes, respectively. Similarly, 25.9% and 7.2% of the sample project beneficiaries from the BiP: PUP project perceived average and high impact on the livelihood outcomes, respectively. The IUHP, which adopted an individual approach in majority of its interventions, recorded a higher perceived impact mean score for the livelihood outcomes of 11.933 ± 8.334 compared to a mean score of 4.69 ± 6.880 of BiP: PUP, which adopted a communal approach. This difference was further supported by the Independent Samples t-test with $t(358) = 7.955$, $p(0.000) < 0.01$ significance level. This suggests that there was a statistically significant difference in the perception of the beneficiaries about the impact of slum upgrading on the livelihoods of slum dwellers between the two projects.

5.3 Conclusions

This study assessed the beneficiaries' perception of the post-implementation stages and sustainability of slum upgrading in secondary cities using case studies of the IUHP in Nakuru and BiP: PUP project in Kitale, Kenya. The assessment has served to demonstrate: the nexus between post-implementation stages and sustainability of slum upgrading, and the perceived long-terms impact of slum upgrading on the living conditions and livelihoods in slum settlements through the perceptions of the project beneficiaries. The study concludes that the two projects were sustainable 15 years after completion and exit of the funding NGO with positive impacts on the living conditions and livelihoods, and that the beneficiaries actively participated in the post-

implementation stages. Based on the summary of the key findings, the study draws the following conclusions:

- i) Slum upgrading interventions with direct and individualized benefits to the project beneficiaries intrinsically motivated higher beneficiary participation in the post-implementation monitoring, evaluation and maintenance compared to those taking a communal approach.
- ii) Slum settlements are unique in the social, economic, historical and political contexts and therefore similar interventions vary in outcomes and sustainability depending on the local context.
- iii) The post-implementation monitoring and evaluation, and maintenance are the pillars of sustainability of slum upgrading and that the success depends on the participation of the project beneficiaries in the process.
- iv) The IUHP and BiP: PUP project contributed to improve the living conditions of the slum residents in the targeted project sites in terms of increased access to improved water and sanitation, structural quality of housing, and security of tenure, and reduced overcrowding.
- v) The two projects created an enabling environment that diversified and strengthened positive livelihood strategies leading to reduced vulnerability, and increased household income, food security, well-being, access to credit, and security of tenure.

5.4 Recommendations

Given the above conclusions, this study made the following policy and future research recommendations about post-implementation stages and sustainability of slum upgrading in the study area and beyond.

5.4.1 Policy Recommendations

The study made the following policy recommendations from the above conclusions:

- i) Local authorities and external agencies should encourage slum upgrading interventions that directly benefit individual slum dwellers to boost their intrinsic motivation for participation in the post-implementation stages.
- ii) Since slum upgrading is a spatially localized action that requires a local public response, there is need for state and non-state actors to build and maintain strong people-public-

private partnerships, especially in the post-implementation stages, to support sustainability of slum upgrading interventions upon the exit of a funding agency.

- iii) This study was confined to the post-implementation stages of monitoring and evaluation, and maintenance and its influence on sustainability. More insights on sustainability of slum upgrading could be gained if the participation of the beneficiaries was assessed on the basis of the entire life cycle of the implemented projects
- iv) The single NGO that facilitated the two slum upgrading projects had limited scope and impact on the living conditions in the project sites as demonstrated by the number of beneficiaries involved. It would serve the study area, and other areas elsewhere in the country and region, if more actors would collaborate in slum upgrading for greater impact on the living conditions and well-being of slum residents.
- v) Slum upgrading efforts should prioritize the development of a diversified portfolio of opportunities, and related activities to strengthen the livelihoods of slum dwellers.

5.4.2 Recommendations for Further Research

Based on the findings and context of this study, the study recommends the following areas for further research:

- i) This study focused on post-implementation stages of monitoring, evaluation and maintenance of slum upgrading. Future studies could conduct comparative studies to examine community participation in the pre-implementation and post-implementation phases and respective influence on sustainability of slum upgrading.
- ii) Similar studies could be carried out in other emerging secondary cities in the country for wider generalization of the findings emerging from this study.
- iii) This study established that there was a vacuum in terms of supervision and continued support of the implemented activities after the exit of the funding NGO. Therefore, studies could be conducted to assess the role of local authorities in post-implementation stages and sustainability of slum upgrading facilitated by non-state actors such as NGOs.
- iv) Comparative studies could be conducted on the influence of the post-implementation stages on sustainability of government and non-governmental sponsored slum upgrading in secondary cities to examine possible areas for integration and collaboration between the two entities.

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APPENDICES

Appendix A: Letter of Introduction

My name is Lugairi Estone, a Ph.D. student in the Department of Geography, Egerton University. As part of the requirements of my studies, I am undertaking a research project in my area of specialization. My research topic is “*Assessment of Beneficiaries’ Perceptions of the Post-Implementation Stages and Sustainability of Slum Upgrading in Secondary Cities of Nakuru and Kitale, Kenya.*” The study selected you as one of my respondents. Your sincere and correct answers will be important in attaining this goal. The study will treat the information provided with the utmost confidentiality and only be used for the academic purpose of this study. Attached is a form of consent to participate in the research for your action. Thank you for your cooperation.

Lugairi Estone

ND13/0416/14

Egerton University

Appendix B: Consent Form

Identification of Investigator and Purpose of Study

I take this opportunity to invite you to participate in a research study entitled: “*Assessment of Beneficiaries’ Perceptions of the Post-Implementation Stages and Sustainability of Slum Upgrading in Secondary Cities of Nakuru and Kitale, Kenya.*” The purpose is to come up with lessons for long-term solutions and strategies for sustainable urban development in secondary cities in Kenya using a case of the Integrated Urban Housing Project in (IUHP) in Nakuru and the Building in Partnership: Participatory Urban Planning (BiP: PUP project) project in Kitale. Your participation will greatly contribute to attaining this purpose. The researcher is Mr. Lugairi Estone, a Ph.D. student in the Department of Geography of Egerton University. If you agree to participate:

- The study will take approximately 30 minutes of your time.
- Your participation is free with no compensation in terms of material and/or finances

Risks/Benefits/Confidentiality of Data

The researcher is not anticipating any known risks resulting from your participation. There will be no costs for or benefit from participating. Only the researcher will have access to the information provided and used only for this study. Your name and contacts will not be accessible to any other person not directly involved in the study.

Participation or Withdrawal

Your participation is voluntary and you may decline to answer any question or withdraw your participation at any time if you feel uncomfortable.

Contacts

Any questions about the study can be directed to the researcher (0720801414 or lugairi@yahoo.com) or Supervisors: Prof F. N. Wegulo (0727-209656) or Prof. H. Murenga (0722361982).

Rights as a research participant

The researcher will endeavour to uphold your rights as much as possible and in case of any dissatisfaction with any part of this study, you may contact, anonymously, Egerton University.

If you agree to participate in this study, please append your signature and the date:

Signed: _____ **(Participant)** **Date:** _____

Signed: _____ **(Researcher)** **Date:** _____

Appendix C: Beneficiary Questionnaire

Personal Details

- 1) Age (in complete years) _____
- 2) Gender: Male Female
- 3) Marital status: Married Never married Separated
Divorced Widow/widower
- 4) Highest level of education: None Primary incomplete Primary complete
Secondary incomplete Secondary complete Post-secondary
- 5) Family size: _____
- 6) Secondary City Nakuru Kitale
- 7) Name of the slum area (project site)

Nakuru: Lake view Bondeni Kwa Rhonda

Kitale: Kipsongo Tuwan Shimo-La-Tewa

Section One: Integrated Urban Housing Development Project (IUHP) and Building in Partnership: Participatory Urban Planning (BiP: PUP project) Project

To assess the level of sustainability of the IUHP and BiP: PUP projects implemented 15 years ago as perceived by the project beneficiaries.

- 1) Number of years lived in this area _____
- 2) As a beneficiary of the Integrated Urban Housing Development Project (IUHP)/ Building in Partnership: Participatory Urban Planning (BiP: PUP project) Project supported and facilitated by ITDG–E, do you recall its activities? Yes No
- 3) If yes, what were the specific benefits realized from the project?
- 4) Which of these benefits are still present?
- 5) Which of the benefits in 3 are no longer present? *Describe what happened*
- 6) On a scale of 1 to 5, where 1 = very low sustainability (VLS), 2 = low sustainability (LS), 3 = average sustainability (AS), 4 = high sustainability (HS), and 5 = very high sustainability (VHS), rate the following indicators of the sustainability of the activities and benefits of the project completed 15 years ago

<i>There is continuous:</i>	VLS	LS	AS	HS	VHS	Explain
Improvement in the living conditions and livelihoods						

Progress in meeting the aims and objectives of the project over the years						
Enhancement of the capacity building and empowerment						
Enhancement of the well-being of the beneficiaries						
Enhancement of momentum for future improvement						
Enhancement of social capital and networks						

7) What measures were put in place to ensure the sustainability of the activities and benefits of the project?

8) In your opinion, what are the main challenges to the sustainability of the activities and benefits of the project?

Section Two: Participation in Post-Implementation of the IUHP/BiP: PUP project

To assess the level of community participation in the post-implementation monitoring and evaluation, and maintenance of the IUHP and BiP: PUP projects as perceived by the project beneficiaries.

1. General community participation in the IUHP/BiP: PUP project

i) Were you in any way involved in the activities of the project? Yes No

ii) If yes, what was your main role in the project?

iii) If no, why were you not involved?

2. Participation in Ex-post monitoring and evaluation stage

i) Are you aware of any post-project monitoring and evaluation conducted?

Yes No Don't know

ii) If yes in 2 (i), were you in any way involved? Yes No

iii) On a scale of 1 to 5, where 1 = no participation (NP), 2 = low (indirect) participation (LP), 3 = average (consultative) participation (AP), 4 = high/active (shared control) participation (HP) and 5 = very high (full control) participation (VHP), rate your level of participation in the following indicators of post-project monitoring and evaluation of the IUHP/BiP: PUP project

<i>Rate your level of participation in the following indicators of monitoring and evaluation:</i>	NP	LP	AP	HP	VHP	Explain
Identification, discussion, and agreement on indicators of progress and success						

Taking corrective measures of lessons learnt						
Keeping the project on-track						
Accessing monitoring and evaluation reports and information						
Reporting progress						

iv) If No in 2 (ii), what happened?

Choose one

Reason	Response
ITDG–EA decided all decisions about monitoring and evaluation without involving the community	
I am not aware of whether monitoring and evaluation took place or not	

v) What measures were put in place to ensure sustainable community participation in the monitoring and evaluation stage?

vi) What challenges affect the sustainability of community participation in the monitoring and evaluation of the project?

3. Participation in the ex-post maintenance stage

i) Are you aware of any post-project maintenance conducted?

Yes No Don't know

ii) If Yes in 3 (i), have you in any way involved? Yes No

iii) On a scale of 1 to 5, where 1 = no participation (NP), 2 = low (indirect) participation (LP), 3 = average (consultative) participation (AP), 4 = high (shared control) participation (HP) and 5 = very high (full control) participation (VHP), rate your level of participation in the following indicators of post-project maintenance of IUHP/BiP: PUP project

<i>Rate your level of participation in the following indicators of maintenance:</i>	NP	LP	AP	HP	VHP	Explain
Assignment of roles and responsibilities						
Capacity building and empowerment						
Carrying out day to day maintenance activities						

iv) If No in 2 (ii), what happened?

Choose one

Reason	Response
ITDG–EA decided all decisions about maintenance without involving the community	
I am not aware of whether maintenance took place or not	

v) What measures were put in place to ensure sustainable community participation in the maintenance stage?

vi) What challenges affect the sustainability of community participation in the maintenance of the project?

Section Three: Impact of the IUHP/BiP: PUP project on Living Conditions

To assess the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the living conditions in the selected slum settlements.

(i) Access to Improved Water

1) What is your main source of water for drinking and cooking?

Piped water into the house	<input type="checkbox"/>	Piped water to plot	<input type="checkbox"/>	Rainwater	<input type="checkbox"/>
Public tap/ standpipe	<input type="checkbox"/>	Tube well/borehole	<input type="checkbox"/>	Tanker-truck	<input type="checkbox"/>
Protected dug well	<input type="checkbox"/>	Unprotected dug well	<input type="checkbox"/>	Water vendors	<input type="checkbox"/>
Protected natural spring	<input type="checkbox"/>	Unprotected spring	<input type="checkbox"/>	Other (specify)	

2) Approximate distance to this water source _____Metres

3) Time taken to get water from this source (round trip including waiting time)? _____

4) Rate the level of adequacy of water from the above main source

Adequate Inadequate

5) How do you cope with a deficit in water supply from the main source?

6) Did the IUHP/BiP: PUP project play any role in improving your access to water

Yes No

7) If yes, what was the role of the project in improving your access to water?

8) On a scale of 0 to 4, where 0 = no impact, 1 = low impact, 2 = average impact, 3 = high impact, and 4 = very high impact, rate the overall level of impact of the project on improving your access to water

Rate: _____ Explain: _____

9) What measures were put in place to ensure the sustainable impact of the project on your improved access to water?

10) What are the challenges to your sustainable access to water?

(ii) Access to Improved Sanitation

1) What kind of toilet facility does your household use?

- Flush toilet Ventilated improved pit latrine
Pit latrine with slab Pit latrine without slab/ open pit
Composting toilet Bucket
Hanging toilet/latrine No facilities/bush/ field (free range)
Other (specify) _____

2) If flush toilet, what is its disposal system?

- Piped sewer Septic tank Pit latrine Don't know Other (specify) _____

3) How many people use this toilet facility? _____

4) What kind of drainage system do you have?

- Open space Soak away Concrete gutters Others (specify) _____

5) How does your household dispose of garbage? Burying Burning

- Dumping House-to-house collection Other (specify) _____

6) Who provides waste collection services?

- Public collection service Private service Household

7) How do you cope with poor sanitation in this area? _____

8) Did the IUHP/BiP: PUP project play any role in improving your access to sanitation

- Yes No

9) If yes, what was the role of the project in improving your access to sanitation?

11) On a scale of 0 to 4, where 0 = no impact, 1 = low impact, 2 = average impact, 3 = high impact, and 4 = very high impact, rate the overall level of impact of the project on improving your access to sanitation:

Rate: _____ Explain: _____

10) What measures were put in place to ensure the sustainable impact of the project on your improved access to sanitation?

11) What are the challenges to your sustainable access to sanitation?

(iii) The structural quality of housing

- 1) Type of house: Permanent Semi-permanent
 Mud Polythene and plastic

- 2) Location of the house: Environmentally safe area
 Hazardous area (describe from observation)
- 3) Type of walls of the house Brick Stones Cement/concrete
 Wood Iron sheets Mud Mud and cement
 Bamboo Others (specify) _____
- 4) Type of roof of the house Corrugated iron sheets Tiles
 Grass thatch Other (specify) _____
- 5) Type of floor of the house Parquet Wood Tile
 Concrete Clay/earth Other (specify) _____
- 6) Number of years that you have been living in this house _____
- 7) How do you cope with poor housing in this area? _____
- 8) Did the IUHP/BiP: PUP project play any role in improving the structural quality of your house Yes No
- 9) If yes, what was the role of the project in improving the structural quality and durability of your house?
- 10) On a scale of 0 to 4, where 0 = no impact, 1 = low impact, 2 = average impact, 3 = high impact, and 4 = very high impact, rate the overall level of impact of the project on improving the structural quality and durability of your house:
 Rate: _____ Explain: _____
- 11) What measures were put in place to ensure the sustainable impact of the project on the structural quality and durability of your house?
- 12) What are the challenges to the sustainable structural quality and durability of your house?

(iv) Security of Tenure

- 1) House ownership Rent Owner-occupier
- 2) If owner-occupier, do you have any official documentation of ownership?
 Yes No
- 3) If yes, what type of documentation:
 Title deed Lease agreement Allotment letter
- 4) What type of tenure: *de facto* *de jure* *Perceived*
- 5) If no in 2, what is the nature of house ownership without official documentation?

- 6) If rented in 1, do you have any official documentation to support your rental agreement/contract with the landlord? Yes No
- 7) If yes, what type of rental contract/agreement do you have?
 Written Oral Don't know
- 8) How much did you pay in rent last month (KES) _____
- 9) What are the challenges of lack of security of tenure?
- 10) How do you cope with the lack of security of tenure?
- 11) Did the IUHP/BiP: PUP project play any role in improving the security of tenure of your house Yes No
- 12) If yes, what was the role of the project in improving the security of tenure of your house?
- 13) On a scale of 0 to 4, where 0 = no impact, 1 = low impact, 2 = average impact, 3 = high impact, and 4 = very high impact, rate the overall level of impact of the project on improving the security of tenure of your house:
 Rate: _____ Explain: _____
- 14) What measures were put in place to ensure the sustainable impact of the project on the security of tenure of your house?
- 15) What are the challenges to your sustainable security of tenure of your house?

(v) Adequacy of Living Area

- 1) Number of rooms in your house: _____
- 2) The number of people living in the house: _____
- 3) The number of people sharing a room in the house: _____
- 4) Is the size of the room(s) adequate for members of your household?
 Yes No *Explain*
- 5) If not adequate, how do you cope with it?
- 6) Did the IUHP/BiP: PUP project play any role in improving the sufficiency of the living area of your house Yes No
- 7) If yes, what was the role of the project in improving the sufficiency of the living area of your house?

8) On a scale of 0 to 4, where 0 = no impact, 1 = low impact, 2 = average impact, 3 = high impact, and 4 = very high impact, rate the overall level of impact of the project on improving the sufficiency of the living area of your house:

Rate: _____ Explain: _____

9) What measures were put in place to ensure the sustainable impact of the project on the sufficiency of the living area of your house?

10) What are the challenges to the sustainable sufficiency of the living area of your house?

Section Four: Impact of the IUHP/BiP: PUP project on Livelihoods

To assess the perception of the beneficiaries about the impact of the IUHP and BiP: PUP projects on the livelihoods in the selected slum settlements

1) In your opinion, has the activities of the IUHP/BiP: PUP project influenced the livelihood strategies adopted by your household? Yes No

2) If yes, what are your specific current livelihood strategies directly linked to the activities of the project? *Identify and explain*

3) On a scale of 0 to 4, where 0 = no impact (NI), 1 = low impact (LI), 2 = average impact (AI), 3 = high impact (HI), and 4 = very high impact (VHI), rate your level of impact of the activities of the project on the following livelihood outcomes:

IUHP/BiP: PUP project	VL	L	A	H	VH	Explain
Reduced household vulnerability						
Improved household income						
Improved household food security						
Improved household wellbeing – quality of life (health and socio-economic)						
Improved household access to credit						
Improved household security of tenure						

4) List the main sources of income of the household: Employment Pension
 Family transfer Help from friends Public assistance
 Business Others (specify) _____

5) On average, what was your total household income last month from the above sources?
 _____ KES

Appendix D: ITDG-EA Project Manager Interview

Section A: Background Information

- 1) Name of the respondent (optional) _____
- 2) Designation _____
- 3) Number of years of service with ITDG – EA? _____

Section B: The IUHP and BiP: PUP projects

- 1) Describe the IUHP and BiP: PUP projects in terms of objectives, activities, period, process, principles, and methods. *Provide any documents about the project if available*
- 2) What were the criteria used to choose Nakuru and Kitale, and the project sites?
- 3) What were the achievements of the two projects?
- 4) Which of these achievements are still present in the two towns?
- 5) What measures did ITDG-EA put in place for the sustainability of the two projects?
- 6) Are these measures working?
- 7) What are the challenges affecting the sustainability of the two projects?
- 8) Was there any ex-post monitoring and evaluation, and maintenance of the two projects?
Explain
- 9) Describe the role of the local community in these stages
- 10) Describe the role and impact of the two projects on the following characteristics in the project sites:
 - a) Access to improved water
 - b) Access to improved sanitation
 - c) The structural quality of housing
 - d) Sufficient living area
 - e) Security of tenure
- 11) Describe the impact of the two projects on the livelihoods of the targeted beneficiaries
- 12) Describe the impact of the two projects on the following livelihood outcomes
 - a) Household income
 - b) Household food security
 - c) Household well-being (health)
 - d) Household vulnerability
 - e) Household access to credit
 - f) Security of tenure

Appendix E: County Urban Development (Local Authority) Interview

Section A: Background Information

- 1) Name of the respondent (optional) _____
- 2) Designation _____
- 3) Number of years of served as a Chief Officer for Urban Development in this county _

Section B: The IUHP/BiP: PUP project

- 1) Describe the Integrated Urban Housing Project (IUHP)/ Building in Partnership: Participatory Urban Planning (BiP: PUP project) project facilitated by ITDG-EA (now Practical Action) in three selected slums in this town for 15 years in terms of objectives and activities?
- 2) What were the criteria used to choose Nakuru/Kitale for the project?
- 3) What were the achievements of the project in this town?
- 4) Was there any ex-post monitoring and evaluation, and maintenance of the project? Explain
- 5) Describe the role of County Urban Development (Local Authority) and the local community in these stages
- 6) Describe the role and impact of the project on the following characteristics in the project sites:
 - a) Access to improved water
 - b) Access to improved sanitation
 - c) The structural quality of housing
 - d) Sufficient living area
 - e) Security of tenure
- 7) Describe the nature of the partnership between ITDG-EA and County Urban Development (Local Authority) in the project. What was the role of County Urban Development (Local Authority) in the project?
- 8) In your assessment, can you consider the IUHP/BiP: PUP project success or failure? *If successful, provide evidence? If failure, why?*

Appendix F: CBO Focused Group Discussion

Section A: Group Collective Data

Organization: Name of the CBO represented, membership, core activities, areas of operation (project site), and the number of years of operation in the project site.

Representative: Name of the representative, designation in the organization, number of years of working with the organization in the area, age, gender, level of education, among others.

Section B: Slum Upgrading in Secondary City of Nakuru/Kitale

1. Describe the IUHP/BiP: PUP project that was implemented in three slums in this town 15 years ago in terms of objectives, activities, and period
2. What role did your CBO play in the project?
3. What were the criteria used to incorporate your CBO in the project?
4. Describe the partnership between your CBO and other stakeholders in the project
5. What were the achievements of the project?
6. In your opinion, comment on sustainability of the IUHP/BiP: PUP project
7. What were the measures put in place by the project to ensure the sustainability of the project since completion? *Are these measures working?*
8. What are the challenges to the sustainability of the project?
9. In your assessment, can you consider the IUHP/BiP: PUP project a success or failure? *If successful, provide evidence? If failure, why?*
10. Was there any ex-post monitoring and evaluation, and maintenance of the project? Explain. Describe the role of the local community in these stages. Discuss any measures put in place to ensure the sustainability of these stages. Any challenges encountered
11. Describe the role and impact of the project on the following characteristics in the project sites: access to improved water, access to improved sanitation, structural quality of housing, sufficient living area, and security of tenure
12. Describe the impact of the project on the livelihoods of the targeted beneficiaries
13. Describe the impact of the project on the following livelihood outcomes of the targeted beneficiaries: household income; household food security; household well-being; household vulnerability; household access to credit; and security of tenure

Appendix G: List of CBOs

IUHP

- i) Daima Usafi USAFI Women's Group
- ii) Twaweza Bondeni Youth Group
- iii) Twaweza Environmental Group
- iv) Mwamko Mpya Youth
- v) Muungano wa Wanavijiji Shikamo
- vi) Elnaku
- vii) Kwa Rhonda Neighbourhood Housing Co-operative
- viii) Naroka Greeners Self Help Group

BiP: PUP Project

- i) Tuwan Water and Sanitation Group
- ii) Magiche Busara Women
- iii) Akriamriam women group
- iv) Amkeni water group
- v) Kitale Green Towns Environmental Group Initiative (KGTEI)
- vi) Tuwan Daily Saving and Development Group (TUDADE)
- vii) Kisumu Ndogo Miti Moja Daraja (KIMIDA)
- viii) Kipsongo Youth Group

Appendix H: Certificate of Ethical Clearance Approval

EGERTON

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UNIVERSITY

P. O. BOX 536-20115
EGERTON

RESEARCH ETHICS REVIEW COMMITTEE

EU/RE/DVC/009
Approval No. EUREC/APP/074/2018

11th January, 2019

Mr. Estone Lugaini
Department of Geography,
P. O. Box 536-20115,
EGERTON

Dear Mr. Lugaini,

RE: Initial Submission - Ethical Clearance Approval of Evaluation of Sustainability of Slum Upgrading and Community Participation in the Post-Implementation Stages in Nakuru and Kitale Towns, Kenya

Reference is made to your application for Ethical Clearance of your Research Project entitled: "Evaluation of Sustainability of Slum Upgrading and Community Participation in the Post-Implementation Stages in Nakuru and Kitale Towns, Kenya."

It was observed that you addressed all the ethical issues that were raised in a Committee Meeting held on 29th November, 2018 through your response dated 13th December, 2018. On the basis of this, your application is therefore granted ethical Approval No.EUREC/APP/074/2018 for implementation effective for one year from 8th January, 2019 upon which you are expected to apply for renewal if the study will not have ended by time of expiry of this approval. Please further note that the Standard Operating Procedures (SOPs) requires that you submit progress reports twice in a year and a final report at the end of your study to the Committee.

Any unanticipated problems resulting from the implementation of this protocol should be brought to the attention of the Committee notifying them of any proposal change(s) or amendment(s), serious or unexpected outcomes or study termination for any reason. You are also required to inform the Committee when the study is completed or discontinued.

Your proposal has therefore been given ethical approval. You are required to obtain a Research License from NACOSTI by checking <https://oris.nacosti.go.ke/guidelines.php> and ensure that you comply with other regulations/ requirements e.g. MTA, Data transfer, access permit, export license etc. as and when applicable before commencement of your study.

Yours faithfully,

Prof. J. K. Kipkemboi
CHAIRMAN – RESEARCH ETHICS COMMITTEE

JKK/SK/sam
cc. DVC (R&E) - To note the file copy

Appendix I: Research Permit

THIS IS TO CERTIFY THAT:
MR. LUGAIRI ESTOME
of EGERTON UNIVERSITY, 0-20115
NAKURU, has been permitted to conduct
research in Nakuru , Transzola
Counties


on the topic: EVALUATION OF
SUSTAINABILITY OF SLUM UPGRADING
AND COMMUNITY PARTICIPATION IN THE
POST-IMPLEMENTATION STAGES IN
NAKURU AND KITALE TOWNS, KENYA

for the period ending:
15th January,2020

[Signature]
Applicant's
Signature

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Appendix J: List of Publications

Lugairi, E., Wegulo, F. N., & Murenga, H. M. (2023). Towards More Sustainable NGO Slum Upgrading Interventions: Lessons from Secondary Cities of Nakuru and Kitale, Kenya. *Journal of Education and Practice*, 14(18), 96-105. <https://doi.org/10.7176/JEP/14-18-14>

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Towards More Sustainable NGO Slum Upgrading Interventions: Lessons from Secondary Cities of Nakuru and Kitale, Kenya

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ABSTRACT

Non-governmental organizations (NGOs) play a significant role in complementing the state to improve the living conditions in urban slums in developing countries through slum upgrading. However, since NGOs operate on fixed budgets and timelines, and in small geographical areas, the sustainability of their interventions remains a subject of research interest and speculation. This has raised questions about the challenges facing sustainability of slum upgrading interventions driven by NGOs in secondary cities in Kenya. It is in line with this argument that this paper examines challenges facing the sustaining of slum upgrading interventions by NGOs in the secondary cities of Nakuru and Kitale, Kenya. The paper was based on an empirical survey conducted in 2019 on the Integrated Urban Housing Project in Nakuru and Building in Partnership: Participatory Urban Planning project in Kitale implemented 15 years ago. Primary and secondary data were collected using a descriptive cross-sectional research design involving a sample of 392 respondents and analyzed quantitatively and thematically. The findings indicate that although NGOs play a significant role in slum upgrading, they encounter several challenges that impede the success, effectiveness and sustainability of their projects. These challenges include limited financial resources, elite capture, limited private-public partnerships, political interference, and negative influence of cultural and traditional elements. Addressing these challenges requires more innovative interventions and approaches that, among other things, incorporate strong local public-private partnerships that support more collaborative and inclusive engagements with project beneficiaries in the post-implementation periods.

Keywords: Slum, Slum Upgrading, Non-Governmental Organization, Sustainability, Project beneficiaries

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Lugairi, E., Wegulo, F. N. & Murenga, H. M. (2023). Beneficiary Participation in Post-Implementation Stages in Slum Upgrading in Secondary Cities of Nakuru and Kitale, Kenya. *Journal of Research on Humanities and Social Sciences*, 13(12), 18-28. <https://doi.org/10.7176/RHSS/13-12-03>

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Beneficiary Participation in Post-Implementation Stages in Slum Upgrading in Secondary Cities of Nakuru and Kitale, Kenya

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ABSTRACT

Slum upgrading is the most highly favoured global strategy for improving living conditions with varied positive impacts across settlements. The sustainability of implemented interventions is contingent upon effective post-implementation stages and participation of targeted beneficiaries in the process. However, studies have attributed continued formation, existence and expansion of slums to inefficient post-implementation monitoring, evaluation and maintenance and lack of or inadequate beneficiary participation. This has raised questions about the perceptions of beneficiaries about their participation in the post-implementation stages in secondary cities in Kenya. Therefore, this paper assesses beneficiary participation in the post-implementation monitoring and evaluation, and maintenance of slum upgrading in secondary cities of Nakuru and Kitale, Kenya. The paper is based on an empirical survey conducted in 2019 on the Integrated Urban Housing Project in Nakuru and Building in Partnership: Participatory Urban Planning project in Kitale implemented 15 years ago. Primary and secondary data were collected using a descriptive cross-sectional research design involving a sample of 392 respondents and analyzed quantitatively and thematically. The findings indicate that the guaranteed benefits from the implemented interventions, and clarity in the roles and responsibilities through capacity building intrinsically motivated active participation of beneficiaries in the post-implementation monitoring, evaluation and maintenance of the two projects. Therefore, local authorities and external agencies should encourage interventions that directly benefit individual slum dwellers to boost their intrinsic motivation for participation in the post-implementation stages.

Keywords: Slum upgrading, post-implementation, monitoring, evaluation, maintenance, and beneficiary participation

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