The role of County Administration in Fire Disaster Mitigation and Management: The case of Mukuru Kwa Njenga Slum, Nairobi County, Kenya.

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A research project submitted to the School of Humanities and Social Sciences, in partial fulfillment of the requirements for the award of master of public policy and administration degree of Kenyatta University.

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DECLARATION

This research project is my original work and has not been presented for award of a degree in any other University.

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ABSTRACT

This study aims at investigating the role of county administration with particular reference to those formerly in provincial administration (county commissioners, district, chiefs and assistant chiefs) in fire disaster mitigation and management in Mukuru Kwa Njenga slum in Nairobi County. The objectives of the study were to investigate the role of county administration in law enforcement, community enlightenment/education, and fire disaster response planning and reconstruction coordination. Literature relating to fire disaster mitigation and management in urban informal settlements in the world, Africa and Kenya has been reviewed. The target populations of the study were the residents of Mukuru Kwa Njenga slum in Nairobi County and the county administration officials serving the area, ranging from the county commissioner, Deputy county commissioner, Assistant county commissioner, chiefs and their assistants as established under the National government coordination Act 2013. Research was conducted through descriptive research design. Snowballing method was used to access respondents where a chain of respondents residing in various villages were accessed. A questionnaire was used to gather information and it was administered to respondents by the researcher and research assistants. The validity and reliability of the questionnaire was tested through a pilot study that was done in Mukuru Kwa Njenga slum before the actual study. In addition to the questionnaires, interviews, observation and statistics from disaster, risks and hazards records were used to establishing the role of county administration in fire disaster mitigation and management in Mukuru Kwa Njenga slum in Nairobi County. The data collected was analyzed using both qualitative and quantitative methods via SPSS and was presented in the form of graphs, pie charts, tables and percentages.
ABREVIATIONS AND ACRONYMS

ERS- Economic Recovery Strategy
ISDR- International Strategy for Disaster Reduction
NADIMA- National Disaster Management Agency
NEMA- National Environment Management Authority
UNOCHA - UN Office for the coordination of Humanitarian Affairs
PRSP- Poverty Reduction Strategy Paper
UNDP- United Nations Development Programme
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OPERATIONAL DEFINITION OF TERMS

Slum
A slum, as defined by the United Nations agency UN-HABITAT, is a run-down area of a city characterized by substandard housing, squalor, and lacking in tenure security. It is an area characterized by pockets of dense informal settlement, inadequate access to safe water, inadequate access to sanitation and other infrastructure, poor structural quality of housing, overcrowding and insecure residential status.

Disaster
A disaster can be defined as a serious disruption of the functioning of the society causing widespread human, material or environmental damage and losses which exceed the ability of the affected community to cope using their own resources. In the slums these include fire, diseases, pollution but in my case the focus is on fire.

Hazard
This is a potentially damaging physical event, human activity or phenomenon that may cause loss of life or injury, property damage, social and economic disruption of life, and environmental degradation among other effects. The hazard being addressed here is fire.

Impact
A powerful effect that something has on another. Fire has various negative impacts especially when it is lit by accident. These may include loss of human life, damage to property, injuries and total loss of property.
Mitigation

Short and long-term actions, programmes or policies implemented in advance of a natural hazard or in its early stages, to reduce the degree of risk to the people, property, and productivity capacity. Fire disasters may be mitigated by giving necessary training to communities living in slums, having proper infrastructures and planned settlement.

Preparedness

This refers to pre-disaster activities designed to increase the level of readiness or improve operational capabilities for responding to an emergency. Preparedness for fire disasters may involve early warning systems, training on fire handling, response planning and educating the slum dwellers.

Response

Response refers to actions taken immediately before, during or directly after a disaster to reduce impacts and improve recovery. In fire disaster response, disaster preparedness in terms of warning systems, training, education, having fire fighting equipments and recovery coordination may be very crucial.

Risk

Risk is the probability of harmful consequences or loss resulting from the interaction between natural hazards and vulnerable conditions of property and people. Given the unplanned settlement, housing, crimes, infrastructure and ignorance, slum dwellers expose themselves to risks including fire disaster risk.
Vulnerability

Vulnerability refers to a set of conditions resulting from physical, social, economic and environmental factors, which increase the susceptibility of a community to the impact of disasters. Vulnerability also refers to the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard. Slums have many characteristics that make them vulnerable to fire disasters that include crime, poor infrastructure, housing materials, unplanned settlement and ignorance.
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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Most of the world’s people now live in cities (UN HABITAT 2006). United Nations projections suggest that all of the world’s population growth in the next 50 years will be absorbed by towns and cities in developing regions. A 2006 report by UN-Habitat says slum population worldwide accounted for more than 70% of the urban population and is estimated to grow at a rate of 27 million people per year between years 2000 and year 2020. As urban development accelerates, the proliferation of unplanned informal settlements, high poverty levels, population explosion, declining ecosystems and failing infrastructure increases the vulnerability of inhabitants to disasters (Geoff et al, 2010).

The rampant growth of urban slums around the world and weather extremes linked to climate change have sharply increased the risks from mega disasters such as devastating floods and cyclones, (U.N. report 2010). India, China and other parts of Asia are at a particularly high risk from so-called mega disasters in slums such as last year's (2009) Cyclone Nargis, which killed an estimated 140,000 people in Myanmar and the massive quake in China that claimed nearly 90,000 lives and left 5 million people homeless (U.N. report 2010). According to Quantelli (1998), fire disasters in cities and slums mainly occur as a result of high levels of vulnerability that arise from high poverty levels, population explosion, rapid and unplanned urbanization, lack of information and awareness and lack of early warning.
In September 2000, governments committed themselves to MDGs entailing a pledge to combat urban poverty with an objective of making major improvements in the lives of 100 million slum dwellers by the year 2020. More importantly, UN-Habitat recognizes that there is a need to address the relationship between the community and government sectors because this is the only way capacity building efforts can be sustainable. It is acknowledged that there is a need for favorable institutional structures if true social change is desired and that it is not possible to rely solely on the community sector or the government actors, but rather, there is a need for cooperation and synergy between them.

According to UN-Habitat (2008) over 800 million people in Africa, Asia and Latin America live in what are variously known as slums, squatter settlements or informal settlements without access to essential services or state-sanctioned property or tenancy rights, tenuous dwelling structures, overcrowding and lack of access to adequate water and sanitation facilities. UN-Habitat (2006) estimates that 72 percent of Sub-Saharan Africa’s urban population, 59 percent of Southern Asia’s urban population and 32 percent of Latin America live in slums. Over 60% of sub-Saharan Africa’s urban population lives in slum conditions; the highest level of 'slum incidence' of any major world region and significantly higher than the developing region average of 32.7% The proliferation of slums across the developing world can be understood as a consequence of disjointed modernization. However, the scale of the phenomenon should also be seen as symptomatic of government failure to proactively manage urbanization (UN 2012; Ravallion, Chen and Sangraula 2007).
Urban researchers have attributed the growth of slum settlements to an array of factors operating at local and global levels including colonial legacies of town planning and governance, rapid urban growth, global economic dynamics, liberalization policies, poor governance and lack of genuine political will to address the issue in a fundamentally structured, sustainable and large-scale manner’ (Habitat, 2003; 5).

In Africa, about one billion people who live in slums are vulnerable to disasters because of poorly built houses and a lack of emergency services (Red Cross report 2009). A 2006 report by UN-Habitat claim that slum populations in Africa accounted for more than 70 percent of the urban population and are estimated to grow at a rate of 27 million people per year between 2000 and 2020. In Dakar, Senegal, a fierce cholera epidemic spread through the coastal slums of West Africa in 2007, killing hundreds and sickening many more in one of the worst regional outbreaks in years (UNHSP 2008). Cholera, epidemic was made worse this year by an exceptionally heavy rainy season that flooded the sprawling shanty towns in Freetown and Conakry, the capitals of Sierra Leone and neighboring Guinea.

According to Action Aid International (2011), in Luis Cabral slum neighborhood of Maputo, Mozambique, residents argue that flooding has worsened since 1980, pointing out that the year 2000 floods completely destroyed the area while in the low-lying coastal slum settlement of Iwaya/Makoko in Lagos, Nigeria, the climate is changing and flooding is becoming more frequent. Local people are concerned about property damage and the effects on child health in an area with totally inadequate sanitation.
In Kenya, people have lived in slums in and around Nairobi since the city’s formation at the turn of the 20th century. According to 2009 Kenya population and housing census, 32% of the total population resides in urban centres with more than 5.4 million Kenyans residing in slums and informal settlements (The Standard February 14, 2013). This predisposes them to natural, manmade and complex disasters. In Nairobi’s slums are the consequence of both explicit government policy and decades of official indifference. Because government policies have not focused on making low-cost housing available or providing slum-dwellers with viable long-term alternatives, the state has contributed to the proliferation of informal settlements. In particular, informal settlements were excluded from city authority planning and budgeting processes, which meant in effect that policy often, treated these areas as if they did not exist (The Standard February 14, 2013).

The city’s overcrowded slums and informal settlements, constructed from cheap materials like corrugated iron and connected to hazardous electricity lines, make them particularly vulnerable to fire. Equally, access roads are few, making passage difficult for fire trucks. Since 1982, over 3000 people have died and billions of shillings worth of property destroyed in fires in Kenya (Draft National Policy for Disaster Management in Kenya, February, 2009).

Research carried out in Nairobi slums by Ndikaru (2009) on crime differentials in Mukuru Kwa Njenga and other slums found out that most of the crimes in the slums are as a result of poverty. Some of the crimes identified are illegal power connections, illegal constructions and siphoning of petroleum products from the pipeline. These crimes are potentially very dangerous and are in fact a fire disaster in waiting. Fires are common in
Nairobi’s slums but urban disasters receive a “baffling” lack of response from aid agencies, indicating major gaps in urban disasters preparedness, says the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA, 2009).

Recent fires that have been witnessed in Nairobi city include the Nakumatt Supermarket fire on 28th January, 2009, (The Standard, 2009, January 30) right in the City’s central business district (CBD) that killed at least 31 Kenyans and reduced the Woolworths building which housed the popular supermarket to ashes. City Hall which operates the Nairobi Fire Brigade experienced a fire on 2nd March, 2004 which gutted several floors and destroyed crucial documents. Other very chilling fire disaster cases that have been reported involving secondary schools such as Kyanguli Boys (on the night of March 25 and 26, 2001 (www.ncbi.nlm.nih.gov n.d), and Bombolulu Girls, Mombasa (1998) in which 68 and 24 students were killed respectively indicate that fire disasters are a reality in Kenya.

In recognition of the huge losses Kenyans incur from fires, the Government launched The Kenya Fire Safety Manual on 7th August 2009. However, the Sinai slum disaster that claimed over a hundred lives and left scores with severe injuries offer an insight on the deplorable living conditions in the Kenya’s informal settlement (EAS, 13th September 2011). The fire tragedy that shocked the entire nation and pulled authorities from their comfort zone was bound to happen with warnings made earlier by the Kenya Pipeline Company. After the focus on it dies down, it might be replicated in many other informal settlements where authority does not act proactively.

With slums being built in prohibited area such swampy region, near airports, over pipelines, under high voltage power cables or near chemical companies, disasters and
especially fire disasters are far from over. According to the 9th principle of the Yokohama strategy and plan of action for a safer world, each country bears the primary responsibility for protecting its own people, infrastructure and other natural assets from the impact of disasters. The Hyogo framework for action 2005-2015 aims at building the resilience of nationals and communities to disasters and was adopted by 162 members of United Nations (UN).

The Hyogo Declaration (2005-2015) is a positive move in which increased attention is given to what affected communities can do for themselves and how best to strengthen them (World Disaster Report, 2004). Thus, there is a need for shifting from emergency response and recovery toward a sustainable disaster prevention and mitigation framework (Mc Entire, 2004; Pearce, 2003), which includes a more holistic approach and the notion of shared responsibility that involves not only agencies but the entire community.

1.2 Statement of the problem

Disasters are common not only in Nairobi’s slums but also in all other urban slums in the world and largely receive a baffling lack of response from agencies indicating major gaps in urban crisis preparedness (UNOCHA 2006). There is little doubt that rapid urban population growth in developing regions and Africa in particular places enormous strain on government resources and capacities (Working paper Series 2013 No.13-146.)

The increasing number of fire disasters in slums combined with the multiplicity of emerging threats and trends are leaving people more vulnerable to the effect of disasters and causing great damage to property, property loss, displacement and death. Improving the lives of slum dwellers is one of the most pressing development challenges of the 21st century (Amnesty International June 2009 Index: AFR 32/005/2009). The objective of
the Social Pillar in Kenya’s vision 2030 is investing in the people of Kenya in order to improve the quality of life for all Kenyans by targeting a cross-section of human and social welfare projects and programmes. Specifically, it focuses on education and training, health, environment, housing and urbanization. Provision of physical and social infrastructure in slums is clearly spelt out under the social pillar but is under serious threat from fire disasters in slums. In view of this, and the ever increasing number of disasters in Kenyan slums and Mukuru Kwa Njenga slum in particular, the role played by county public administration officers in disaster mitigation and management needs to be investigated in a bid to minimize or eradicate fire disasters in the slum.

1.3 Research questions

The study was guided by the following research questions:

1. What are the causes of fire disasters in Mukuru Kwa Njenga slum in Nairobi County?

2. What is the role of County administration in community fire disaster mitigation and management in Mukuru Kwa Njenga slum?

3. What is the role of County administration in post disaster reconstruction following fire disasters in Mukuru Kwa Njenga slum in Nairobi County?

1.4 Objectives of the study

1. To examine the causes of fire disasters in Mukuru Kwa Njenga slum in Nairobi County.

2. To investigate the role of County administration in disaster response planning in fire disaster.
mitigation and management in Mukuru Kwa Njenga slum?

3. To assess the role of County administration in post disaster reconstruction after fire disasters in Mukuru Kwa Njenga slum?

1.5 Research assumptions

1. Careless among Mukuru slum residents leads to frequent incidents of fire outbreak in the slum.

2. Lack of adequate mobilization of the community on response plans hinders fire disaster mitigation

and management in Mukuru Kwa Njenga slum in Nairobi County.

3. Poor post fire disaster reconstruction strategies in Mukuru Kwa Njenga slum hinders fast recovery by the victims.

1.6 Significance of the study

The reality that people living in slums are subjected to fire disasters that cause massive destruction, death, injury and displacement of populations made the United Nations to declare the 1990s the decade for disaster reduction in an effort to combat the fatalism attached to disasters (World Disaster Report, 2004). The declaration calls for concerted efforts by various parties in disaster management.

The findings of the study will help improve the efficiency of County administration in disaster preparedness, mitigation, planning, management and response by highlighting their crucial roles. It is hoped that the communities in prone areas will act not only in readiness for disaster but will be proactive in disaster prevention, mitigation and management which is in line with the world governments commitment to MDGs In September 2000, entailing a pledge to combat urban poverty with an objective of making
major improvements in the lives of 100 million slum dwellers by the year 2020. The findings of this study may also be useful in further academic research and may be of interest to groups, organizations and ministries dealing with disaster management and Kenya’s vision 2030, in which the social pillar focuses on a save, slum free nation.

1.7 Scope and Limitations of the study

The study was limited to Mukuru Kwa Njenga slum in Nairobi County. This is mainly due to the vast nature of the slum covering over 12.0 square kilometers and having a population of approximately 201042 people (111085 males and 89957 females) (2009 Kenya National Bureau of Statistics (KNBS) with population density of 16720 persons per square kilometer. This slum is also targeted since it has experienced a number of disasters recently. Since there has been a rapid rise in disasters in the slum since the year 2000, this study focused on the period between 2000 and 2012. Most of the very recent incidences have not been documented and as such were not be included in the study. The new constitution comes with new and clearer land policies and regulations that are likely to change the informal settlements scenario in the slums.

1.8 Delimitations of the study

This study delimited to Mukuru Kwa Njenga slum in Nairobi County. This slum was targeted due to the increasing occurrence of disasters and the rapid expansion that it is undergoing in terms of population density. The study was delimited in terms of historical dimensions since it focused on the period from 2000 to 2012. This is mainly due to the rapid occurrence of disasters during the period and the availability of relevant information that is documented. The study delimited focused on fire disasters although there were other disasters as well.
CHAPTER TWO
LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

In recent times the world has experienced major disasters of devastating magnitudes than the past. The whole disaster cycle, including preparedness, mitigation, relief, response, recovery and reconstruction requires cohesive and complementary actions in order to be effective. Risks and disasters have been grouped into categories (Shaluf, 2007): Natural disasters, man-caused disasters, hybrid, and subsequent disasters.

According to the International Federation of Red Crescent Societies (2011) the Haiti earthquake tragedy left some 212,000 people dead and a whooping 300,000 were injured 40,000 of whom lost their limbs. These huge figures indicate the necessity for disaster warning, preparedness, response and management which in turn considerably minimize short term and long term effects for disasters.

According to Benson et al. (2001), usually the poorer communities are the most vulnerable to natural disasters due to a variety of social, political, cultural and economic factors forcing them to live in the disaster prone areas. In the UK for example, in the fire and rescue service the shift from fire fighting to fire prevention exhibits the shift in emphasis of institutional thinking; from reactive (putting out fires) to proactive (preventing fires). This study however, does not show how or who are to be involved in fires disaster prevention, mitigation and management.

An Oxfam study (2005) indicated that the tsunami mainly affected the poorest people in each of the three worst hit countries. In Sri Lanka nearly one-third of the population in
the affected areas was living under the poverty line. Given the difficulties in dealing with the problems associated with the tsunami-related deaths, injuries, psychological damage, land devastation, the destruction of homes and livelihoods and the relocation of shocked people, it was essential for the response factors to be efficient and effective as well as humane (Marcia Perry, 2007). Recommendations and themes from post-tsunami reports point to the future need for holistic disaster management planning that is broad-based, informed and inclusive (Athukorala and Resosudarmo, 2006). For example, the Thai Government is now taking such a leadership role, having organized thousands of people along Thailand's Andaman coast to become involved in simulated tsunami warning drills in December 2005. Similarly, Indonesia is now being proactive and putting sirens on mobile phone towers in a bid to warn coastal residents of a tsunami. (Tsunami Evaluation Coalition) Recognition by all parties of the pivotal role of local-nation governance and the involvement of local communities was also stressed as an important disaster management requirement (Ahrens and Rudolph, 2006). In Indonesia steps taken in mainstreaming DRR include: Issuance of disaster management law 2007, National action plan for DRR 2006-2009, Establishment of DRR national platform in 2008, Hyogo framework for action priority that ensures that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation. Though the local institutions involvement is highly proposed in these studies, they fail to indicate the direct involvement of administration and their roles in DRR.

According to Lyall (1996) the main reason for failure in disaster mitigation and management is the lack of awareness on the part of the slum communities. Success can
be achieved if the staff is well informed on the existence of the plan and if there is continuous training of all participants, insisting on the comprehension of the plan and on the adoption of a right way to respond to a disaster (Matthews et al., 2006). Caution however is suggested given that disaster management and mitigation is not a simple “once and for all” procedure (Matthews, 2005). This situation calls for the involvement of trainers, monitors, planners and respondents who are on the ground so as to adequately reach the slum people. This study does not in any way tell us who are required to do these thereby leaving a gap for further research.

In Africa, disaster resilience is one of the buzz words that have recently entered the disaster discourse, but its entrance could be seen as a birth of a new culture of dealing with disasters. In the Zimbabwean context, Rural District Councils (RDCs) which are "decentralized" government units are expected to deliver the disaster risk reduction goals in the rural areas of Zimbabwe. Community based disaster management (CBDM) is one of the frameworks for implementing the disaster resilience strategy (Bernard, 2006). This case of decentralization challenges us to assess our disaster preparedness at the local or decentralized level.

Various types of natural as well as man-made hazards do exist in Malawi (Mijoni, 2006) and it has been noted that there is an increased frequency of natural disasters since 1970 (Malawi Department of Poverty and Disaster Management Affairs, 2004). These hazards have often resulted into serious disasters leading to loss of lives, property, and livelihoods. Overpopulation in Malawi is putting pressures on services like health facilities and the stress on natural resources for such a small country is obvious. Due to this underlying factor, Malawian communities are therefore very much vulnerable to the
impact of disasters. The situation so depicted in Malawi is very close to what we have in the Kenyan slums.

Periperi u (Partners enhancing resilience to people exposed to risk) is a university partnership that focuses on reducing disaster risk in Africa. The partnership in DRR involves capacity development, strengthening legal framework, risk identification and monitoring, educational programmes related to DRR including support for institutions offering degrees in disaster management, implementation of programmes that climate change, adaptation, natural resource management, land use management financial and economic development, disaster risk transfer and strengthening disaster preparedness for effective response at all levels.

In the Disaster reduction in Africa report (2009), UN-ISDR recommended the integration of DRR into their development policies and planning process, development of multi-sectoral –multi stakeholders’ national platform and similar national coordination mechanisms should continue to be developed and strengthened, involvement of disaster prone communities, Strengthening disaster warning systems, development and adoption of DRR subject areas into school curricula by national and local authorities and the application of a regional readiness framework. This suggests that there is a huge room for roles to be played by administration.

In recent years, Kenya has continued to face a rising degree of vulnerability to disaster risks. Communities are predisposed to disasters by a combination of factors such as poverty, aridity, illegal settlements, lawlessness, political interference, lack of awareness and rapid urbanization. According to the UN Human Settlements Programme (UN-Habitat), 60 percent of Nairobi’s population lives on 5 percent of the land. The city’s
overcrowded slums and informal settlements, constructed from cheap materials like corrugated iron and connected to hazardous electricity lines, make them particularly vulnerable to fire. Access roads are few, making passage difficult for fire trucks. Fires are not the only risk prevalent in low-income urban areas as UNOCHA highlights terrorism attacks, floods, social conflicts, disease outbreaks, insufficient access to water and sanitation, high risk of gender-based violence and food insecurity as some of the major issues facing urban communities.

In Kenya, disasters have been witnessed in various areas. Nyakundi, (2009) did a research on community knowledge, perceptions and response to flood risks in the Nyando basin in western Kenya. In this research, it was established that the level of community knowledge about disasters and how to deal with them leaves a lot to be desired about the role of administrators in the education of the disaster prone communities. Research carried out in Nairobi slums by Ndikaru,(2009) on crime differentials in Mukuru Kwa Njenga and other slums found out that most of the crimes in the slums are as a result of poverty and ignorance. Some of the crimes identified are illegal power connections, illegal constructions and siphoning of petroleum products from the pipeline. These crimes are potentially very dangerous and are in fact a disaster in waiting.

In a study on fire safety management in government buildings in Nairobi carried out by Macharia (2010), 38% of the respondents claimed that they have never been given basic training on fire safety but less than half of the respondents have ever participated in a fire drill. 88% of the respondents said that they would know what to do in the event of a serious fire. Many of the respondents had a good idea of what the Fire Brigade would
need to know if they needed their assistance. An assessment of fire safety management in government training institutions has been done by Moses K. et al (2012). 52% of respondents in this study indicated that they have participated in fire evacuation drills. 92% of the respondents confirmed the availability of fire extinguishers in government training institutions and 52% indicated that there are fire hydrants. 84% of the respondents agreed that firefighting equipments are strategically placed. The situation in the slums in Nairobi and particularly in Mukuru Kwa Njenga in terms of fire disaster preparedness and mitigation remains unknown.

Another research on staff perception, knowledge and involvement in relation to disaster preparedness among selected health facilities in Nairobi County, Kenya by Okero (2013), indicates that most of the respondents were positive about disaster preparedness, had knowledge on disaster management and were involved in disaster prevention and mitigation. The preoccupation of the poverty stricken residents of Mukuru Kwa Njenga to make ends meet may not give them the chance to be involved in disaster preparedness.

In Kisumu, an in-depth analysis of the conditions in informal settlements, as well as an assessment of the past efforts to upgrade slums in Kisumu was undertaken through an inclusive and collaborative process. The published situation analysis examines the political, social, physical, economic, cultural and institutional factors that have an impact on Kisumu’s slums. As a solution, it proposes an integrated approach to slum upgrading, singling out issues of security of land tenure, improvement of basic infrastructure, and housing, access to health and social services, and environmental management.
UN-HABITAT's activities in Kisumu and Nairobi focuses on building the capacities of the local communities, for instance in organizing themselves and negotiating with the authorities about their needs and priorities. In the

The outcomes of the 2005 World Conference on Disaster Reduction (WCDR) confirmed that the concept of disaster resilience had been gradually finding more space in both theory and practice in a wide range of disaster risk reduction discourse and interventions. Terms like “sustainable and resilient communities” “resilient livelihoods” and “building community resilience” have clearly become common terms in journal articles and programme documents (Bernard M. 2006)

Effective risk management requires engagement at all levels in identifying, prioritizing, warning and informing; essentially this is building capacity about potential risk. The main aim of disaster management should be focused on preparedness. (Geoff, et al 2010).

Building resilience recognizes that human-environment interactions are both the cause of increased risk, but also the space where interventions can refocus efforts on preparedness, built on local knowledge, informed by predictions. Renewing the partnership between government and the requires good governance that exhibits characteristics as participation, transparency, equity, efficiency and accountability (Bermann and Redlener, 2006).

The new paradigm needs to focus on people and their environment and use learning methods to develop preparedness. It also requires a shift in the behavior of response agencies with a greater focus on preparedness achieved through resilience building that enhances coping capacity (Geoff, et al 2010). This research aims at establishing the roles
that may be played by County administrators in fire disaster preparedness and mitigation not only as response agent but also in identifying, prioritizing, warning and informing and essentially building capacity about potential fire risks

2.2 Theoretical framework

Slums have traditionally been portrayed as a transitional phenomenon associated with modernization—a natural by-product of the (assumed) complementary processes of industrialization and urbanization. In 1968, ecologist Garrett Hardin explored this social dilemma in The Tragedy of the Commons. Hardin discussed problems that cannot be solved by technical means, as distinct from those with solutions that require a change only in the techniques of the natural sciences, demanding little or nothing in the way of change in human values or ideas of morality. Hardin focused on human population growth, the use of the Earth's natural resources, and the welfare state. If individuals relied on themselves and not on the relationship of society and man, Hardin argued that how many children a family would have would not be of concern. Parents breeding excessively would leave fewer descendants because they would be unable to provide for each child adequately. Hardin says that if the children of improvident parents starved to death, if over breeding was its own punishment, and then there would be no interest in controlling the breeding of families. Hardin blamed the welfare state for allowing the tragedy of the commons; where the state provides for children and supports over breeding as a fundamental human right, Malthusian catastrophe is inevitable.

Hardin employed a key metaphor, the Tragedy of the Commons to show why when a resource is held in common, with many people having ownership and access to it, a self-interested rational actor will decide to increase his or her exploitation of the resource
since he or she receives the full benefit of the increase, but the costs are spread among all users. The remorseless and tragic result of each person thinking this way, however, is ruin of the commons, and thus of everyone using it. The straightforward application of the herdsman analogy to world population is that each couple expects to experience a large benefit from having another child, but only a little of the full social and ecological cost.

This theory is useful in my study in that the informal settlements are commonly owned resources that the slum dwellers do little to improve so long as they individually are benefitting regardless of the situation of the others. A self-interested rational actor will decide to increase his or her exploitation of the resource since he or she receives the full benefit of the increase without due consideration to their safety, but the costs are spread among all users. The remorseless and tragic result of each person thinking this way, however, is ruin of the commons, and thus of everyone using it. The ruin could in this case be in the form of fire disasters that are evident in slums.

2.3 Conceptual Framework

The conceptual framework aims at depicting the relationship between dependent and independent variables in the research study.
Law/policy enforcement

Law/policy enforcement is one of the problems that afflict the slums in Kenya and Mukuru Kwa Njenga slum in particular. Previously in this work it has been mentioned that the slum dwellers are notorious for tapping electricity illegally, siphoning fuel, illegal constructions and unplanned settlements. These acts endanger them in their ignorance. We have had fire disasters resulting from fuel licks killing over a hundred residents. As such the enforcement of the law and enactment of policies may go a long way in prevention and mitigation of fire disasters in the slum.

Community enlightenment

Most of the residents of Mukuru Kwa Njenga slum have poor education background and are ignorant of the eminent danger posed by their very own acts. They have witnessed
several disasters but remain ignorant or non reactive to prevent further disasters.

Community enlightenment on the dangers they expose themselves to may go a long way in trying to prevent, mitigate or even manage disasters. This could be in the form of training in fire drills, first aid, disaster prevention and management.

**Response planning**

When the community is not adequately enlightened on disaster response and preparedness, in the event that it occurs, the efforts that may be put will not deliver the desired results due to lack of prior planning. There is need to have prior training on the part of the residents, availing fire fighting equipment’s, ensuring pass ability of the access roads by fire trucks within the slum and having the necessary communication channels. This would ensure better management fire disasters when they occur.

**Reconstruction coordination**

In the event that fire disasters strike, it is imperative to have proper reconstruction coordination to mitigate the effects of a disaster. This coordination forms a good base for the management of the after disaster activities so as the get the victims out of the aftermath of a disaster. Without proper coordination, it would be difficult to assist all those that may be affected by a fire disaster and hence a failure to mitigate the effects of such a disaster.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research design

A research design is the plan and structure of investigation so conceived as to obtain answers to research questions (Cooper, D & Schindler, P. 2003). This research used a study of Mukuru Kwa Njenga slum in Nairobi County. This approach has enabled the researcher have an in depth study of the area and has been useful in regard to time and financial implications of censuring all the slums in Kenya.

3.2 Location of the study

This study was carried out in Mukuru Kwa Njenga slum in Nairobi which covers about 12 Square kilometers and is about 15 kilometers from the Central Business District. The slum has a population of about 201042 people with a population density of 16720 persons per square Kilometer (2009 population census report). This is an area that is very vulnerable to disasters due to poverty, lawlessness, Rapid Unplanned urbanization, unpreparedness, lack of coordination and lack of awareness on disaster management among other factors.

3.3 Target population

According to Cooper, D & Schindler, P. (2003), population is a collection of elements about which we wish to make some inferences. Population is the entire group of people, events or things of interest that a researcher wishes to investigate. In this study, the target population comprised residents of Mukuru Kwa Njenga slum in Nairobi County. The
area has 21 villages and an estimated population of about 201042 people (Kenya Population and Housing Census 2009)

### 3.4 Sampling strategy and sample size

This study used snowballing sampling strategy. In snowballing strategy, the researcher develops a chain of respondents with relevant information about the phenomenon under investigation (Ng’ang’a, et. al, 2009). Exploratory research design involving a survey of related literature by earlier researchers and authors has been engaged. Sampling is taking a portion of a population as representative of a population and using it as a basis for making conclusions about the population. A sample is a part of the population that is drawn using means that ensure that it is as representative of the population as possible. A sample size of 210 respondents has been put into classes and used in this study. This has been done purposefully to increase precision thereby reducing the standard error.

<table>
<thead>
<tr>
<th>Classes</th>
<th>Sample</th>
<th>Males</th>
<th>Females</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrators</td>
<td>50</td>
<td>32</td>
<td>18</td>
<td>23.8%</td>
</tr>
<tr>
<td>Politicians</td>
<td>25</td>
<td>20</td>
<td>5</td>
<td>11.9%</td>
</tr>
<tr>
<td>Opinion leaders</td>
<td>25</td>
<td>14</td>
<td>11</td>
<td>11.9%</td>
</tr>
<tr>
<td>Church leaders</td>
<td>25</td>
<td>10</td>
<td>15</td>
<td>11.9%</td>
</tr>
<tr>
<td>Teachers</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td>9.52%</td>
</tr>
<tr>
<td>NGOs</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>4.8%</td>
</tr>
<tr>
<td>Ordinary residents</td>
<td>55</td>
<td>25</td>
<td>30</td>
<td>26.2%</td>
</tr>
<tr>
<td>Total</td>
<td>210</td>
<td>116</td>
<td>94</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3.1 Sample size and respondents distribution by gender - Source: Researcher
3.5 Research instruments

A questionnaire, observation schedule and interview guide has been used to gather information. The choice of using a questionnaire was based on the fact that it is easy to administer and it gives the respondent the freedom of expression since the respondents remain anonymous and are not under close scrutiny. The researcher conducted personal interviews and used observation to obtain data. The interviews mainly involved high ranking respondents especially those in administration. Observation was useful in gathering information relating to physical data like topographical information, drainage system and infrastructure. Exploratory research was used to get archival/secondary data and primary data from government records on disasters registered in the area.

3.6 Data collection techniques.

The researcher and research assistants issued the questionnaires to the respondents. The questionnaire was pilot tested before the real study to ensure that it was valid and reliable. This was followed by the actual research where data collected was used to make conclusions and recommendations. The respondents were given adequate time to respond due to the fact that they may not have had adequate time to respond to the questions given the casual nature of their work. Direct observations were used to collect observable information. Interviews were also used to get information mostly from high ranking respondents. Review of related literature from published Sources like government publications, International Bodies, Semi Government publications, reports of Committee and Commission, private publications, Newspapers and magazines, research Scholars, censuses reports, organizational records, Libraries, internet, repositories and databases were also used to gather secondary data.
3.7. Data analysis and presentation

The data that collected was analyzed by qualitative and quantitative statistics. Qualitative method of data analysis was employed to deal with qualitative data resulting from interviews and observation while the quantitative was employed to analyze all data of numerical nature. Corroboration of primary information from one source with other sources was done in order to establish authenticity. This data was also corroborated with secondary data available to the researcher to establish its validity. Qualitative analysis was done by asking the same question to different people. Responses by respondents were quantified and using frequencies and percentages, calculated and presented in the form of tables, bar graphs and pie charts for analysis.
CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the results that were obtained from the study. The results are subdivided into various subsections for the purpose of presentation, analyzing and discussion.

4.2 Data presentation

The data that was collected from the respondents working/living in Mukuru Kwa Njenga slum in Nairobi County has been presented here below in the form of graphs, percentages and pie charts.

4.3 Questionnaire return rate

The questionnaires were administered to the 210 persons residing or working in Mukuru Kwa Njenga slum in Nairobi County who had been sampled by the researcher. A total of 178 persons residing or working in Mukuru Kwa Njenga slum in Nairobi County responded. This is a return rate that is equal to 84.7% which can be regarded as very good since Hartman & Hedborn (1979) states that a 50% return rate is adequate, 60% is good and 70% or above is very good.

4.4 Demographic information

The respondents were requested to give information relating to gender, age, academic/professional qualifications, experience or their designations in the slum. This information was essential in determining whether these variables had an impact on the responses of the persons residing or working in Mukuru Kwa Njenga slum in Nairobi County in relation to fire disasters in the slum.
4.4.1 Distribution of respondents by age

The total questionnaires that were returned were 178 out of which 90 were from female respondents and 88 from male respondents. The majority of the respondents were in the 36-45 years bracket (52.17%). Those in the 26-35 years bracket were 24.64%, those below 25 were 4.35%, those in the 46-55 years were 10.15% while those above 55 years were 8.69%.

Table 4.1 Distribution of respondents by gender and age

<table>
<thead>
<tr>
<th>Age bracket</th>
<th>Males</th>
<th>Females</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 25 years</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>4.35%</td>
</tr>
<tr>
<td>26-35 years</td>
<td>23</td>
<td>21</td>
<td>44</td>
<td>24.64%</td>
</tr>
<tr>
<td>36-45 years</td>
<td>37</td>
<td>56</td>
<td>93</td>
<td>52.17%</td>
</tr>
<tr>
<td>46-55 years</td>
<td>11</td>
<td>7</td>
<td>18</td>
<td>10.15%</td>
</tr>
<tr>
<td>Above 55 years</td>
<td>13</td>
<td>2</td>
<td>15</td>
<td>8.69%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>88</td>
<td>90</td>
<td>178</td>
<td>100%</td>
</tr>
</tbody>
</table>

The age distribution table above indicates that a majority of the persons residing or working in Mukuru Kwa Njenga slum in Nairobi County are aged between 26-45 years. This indicates that most of those residing or working in Mukuru Kwa Njenga slum are the young job seekers or those who recently got jobs/businesses. This is also indicative of the parentage level of the respondents. Most of them have young families that live with
them in the slum. The table also shows that the slum has persons of either gender in almost equal measure which is indicative of a normal society.

**4.4.2 Respondents designation.**

Respondents designation were classified into six categories as summarized in table 4.2 below and research findings indicate that a majority of the respondents were ordinary residents. This number is also related to the number of questionnaires distributed to them. This is so due to their relatively high number in the slum. Responses were received from members of all the six categories.

**Table 4.2 Distribution of respondents residing or working in Mukuru Kwa Njenga slum in Nairobi County by professional qualifications**

<table>
<thead>
<tr>
<th>Respondent’s designation</th>
<th>Males</th>
<th>Females</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrators</td>
<td>5</td>
<td>2</td>
<td>7</td>
<td>3.93%</td>
</tr>
<tr>
<td>Teachers</td>
<td>6</td>
<td>9</td>
<td>15</td>
<td>8.43%</td>
</tr>
<tr>
<td>Opinion leaders</td>
<td>8</td>
<td>4</td>
<td>12</td>
<td>6.74%</td>
</tr>
<tr>
<td>Ordinary residents</td>
<td>55</td>
<td>67</td>
<td>122</td>
<td>68.54%</td>
</tr>
<tr>
<td>NGO workers</td>
<td>6</td>
<td>5</td>
<td>11</td>
<td>6.18%</td>
</tr>
<tr>
<td>Politicians</td>
<td>8</td>
<td>3</td>
<td>11</td>
<td>6.18%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>90</strong></td>
<td><strong>178</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**4.4.3 Distribution by duration of stay in Mukuru**

Research findings indicate that a majority of the respondents have been in the slum for more than ten years (53%) meaning that they understand the slum live and disasters that have occurred in the Last ten years at the least. Those whose duration of stay in Mukuru is less than three years are 17% while those with three to ten years are 30%. These long periods of stay in Mukuru Kwa Njenga slum has helped the persons residing or working in the slum to give responses that could be relied upon.
4.5 Analysis and discussion of the findings

This research study aimed at analyzing the role of County administration in fire disaster mitigation and management in Mukuru Kwa Njenga slum in Nairobi County. The following is an analysis and discussion of the findings relating to the various research questions.

4.5.1 Causes of fire disasters in Mukuru Kwa Njenga slum in Nairobi County

![Graph showing percentage distributions of respondents on causes of fire disasters]

Figure 4.2 Percentage distributions of respondents on causes of fire disasters
From the figure above, it is clear that lawlessness (27.4%) and ignorance (25.7%) are the leading causes of fire disasters in Mukuru Kwa Njenga slum in Nairobi County. Those lawless residents eventually cause fire disasters that affect many residents of the slum. This finding is in line with the tragedy of the commons theory where Hardin employed a key metaphor, the Tragedy of the Commons to show why when a resource is held in common, with many people having ownership and access to it, a self-interested rational actor will decide to increase his or her exploitation of the resource since he or she receives the full benefit of the increase, but the costs are spread among all users. The remorseless and tragic result of each person thinking this way, however, is ruin of the commons, and thus of everyone using it. Most of the lawlessness and ignorance follows under this category by Hardin where individuals just think of their personal benefits but in doing so they end up causing harm to all the slum dwellers. This indicates that law enforcement agencies that include county administrators have a task to undertake in eradicating ignorance and bringing to an end the lawlessness in the slum. Illegal electrical connections and carelessness also needs to be tackled if fire disasters are to be minimized or even brought to an end in the slum.

4.5.1 The role of County administration in community fire disaster mitigation and management in Mukuru Kwa Njenga slum

One of the objectives of this study was to determine the role of county administrators in fire disasters mitigation and management in Mukuru Kwa Njenga slum in Nairobi County. There was an overwhelming positive response to the question as to whether law enforcement leads to fire disaster mitigation and management in Mukuru Kwa Njenga slum. 90% of the respondents claimed that law enforcement could greatly lead to fire
disasters mitigation and management. This corroborates with the claim that in Africa about one billion people who live in slums are vulnerable to disasters because of poorly built houses and a lack of emergency services (Red Cross report 2009). However, according to the public administrators (chiefs) of Mukuru Nyayo, Mukuru Kwa Njenga and Viwandani locations who were interviewed, there is great hindrances to their efforts in enforcing laws in Mukuru slum thus they are unable to effectively maintain law to avoid fire accidents. Some of the difficulties that they face in maintaining law and order include political interference, presence of illegal gangs that make it impossible for the public administrators to maintain law in the slum and inability of the city council to stamp authority over the happenings in the slums in Nairobi. Religious leaders from various denominations were united in their opinions in relation to the illegal gangs that eventually hinder law enforcement in the slums.

![Figure 4.3 Percentage of respondents on effectiveness of law enforcement in fire disaster mitigation and management](image)

Figure 4.3 Percentage of respondents on effectiveness of law enforcement in fire disaster mitigation and management
78% of the respondents said that there are no laws that govern the conduct of the residents in terms of settlement in Mukuru Kwa Njenga slum and another 45% suggested that the few informal laws existing in relation to settlement are not put into practice/enforced to improve on fire disaster mitigation and management in the slum. This was corroborated by the views of the teachers of Baptist primary school, St. Elizabeth catholic primary school and star of hope primary school. The teachers were of the view that the many petroleum deports in the slum along Nanyuki road should have been controlled or disallowed altogether since they are potentially very dangerous. The Sinai fire tragedy as reported by East Africa Standard on 13th September 2011 is one such fire disaster that resulted from a pipeline that runs through the slum. The newspaper reported that most of those who perished were attempting to scope oil spilling from the pipeline when the disaster struck. This is in agreement with the tragedy of the commons that suggests that self-interested rational actor will decide to increase his or her exploitation of the resource since he or she receives the full benefit of the increase without due consideration to their safety, but the costs are spread among all users. However, 156 respondents agreed to the fact that law enforcement could actually results in community safety from fire disasters while another 147 respondents claimed that abiding by the laws help mitigate and manage fire disasters. The local leaders interviewed from the various village-Jamaica, Paradise A and B, Sinai reli and Sinai original, milimani, Uchumi, Riverside and Dolnholm agreed to the statement above. It was the opinion of 43% of the respondents that they were not comfortable with the law enforcement levels in Mukuru Kwa Njenga in relation to fire disasters. Church leaders led by Fr. Karumba of the Catholic in were particularly quick to highlight and condemn
this state of lawlessness. However, this contradictory situation and views by the residents could be explained by the desperate situation of poverty that slum dwellers find themselves in that forces them to repel law enforcers that would haul them into nowhere and stop their selfish interest that eventually leads to their ruin as commons. The table below indicates the various forms of lawlessness that are prevalent in the Mukuru Kwa Njenga that could lead to fire disaster

Table 4.3 Forms of lawlessness prevalent in the Mukuru Kwa Njenga

<table>
<thead>
<tr>
<th>Form of lawlessness</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illegal electricity connections</td>
<td>31%</td>
</tr>
<tr>
<td>Unplanned settlements</td>
<td>25%</td>
</tr>
<tr>
<td>Unplanned housing structures</td>
<td>23%</td>
</tr>
<tr>
<td>Resistance to law enforcers</td>
<td>18%</td>
</tr>
<tr>
<td>Others</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

A majority of the respondents (60%) strongly agreed that County administrators have a role in enforcing the law to mitigate and manage disasters but also agreed to the fact that the law enforcers are not welcome in Mukuru Kwa Njenga slum. This was linked to political interference and the presence of illegal gangs that ‘command’ the slum by the Makadara County deputy commissioner during the interview. Political interference was particularly quoted in relation to the issue of slum built on a pipeline. The efforts of the county commissioners have been thwarted by politicians citing loss of voters. 88% of the
respondents strongly agreed that Mukuru Kwa Njenga slum is unsafe from fire disasters and that it is not easy for the law enforcers to assist the residents in case of such emergency due to hindrances from politicians and rapid unplanned urbanization. This is evidenced by the frequent fire tragedies that have hit the slum as indicated in the table below. 67% of the respondents agreed that there are illegal electricity connections that make the slum prone to fire disasters and this corroborates with the research carried out in Nairobi slums by Ndikaru (2009) on crime differentials in Mukuru Kwa Njenga and other slums that found out that most of the crimes in the slums are as a result of poverty and some of the crimes identified are illegal power connections, illegal constructions and siphoning of petroleum products from the pipeline.

The County administration has made numerous efforts in reducing fire disasters in the slum. The county administrators have tried to forcefully evict the residents from the slum and especially those who have build structures on access roads. This has however been hindered by politicians interference. The administrators sensitize the residents on fire disasters during monthly barazas held in the various villages. The administrators have also been working closely with Kenya power and lighting company to end illegal tapping of electricity. The biggest hindrance has been that these illegal connections and settlements resurface as soon as the administrators are through with clearing them.
Table 4.4 Date and Villages/places in Mukuru Kwa Njenga affected by fire disasters

<table>
<thead>
<tr>
<th>Date</th>
<th>Village/place affected by fire tragedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>17th September 2013</td>
<td>Sinai Original village</td>
</tr>
<tr>
<td>5th September 2012</td>
<td>Sinai Original village</td>
</tr>
<tr>
<td>5th September 2013</td>
<td>Paradise B village</td>
</tr>
<tr>
<td>4th September 2013</td>
<td>Dolnholm village</td>
</tr>
<tr>
<td>8th August 2013</td>
<td>Kaiyaba Kambi Moto village</td>
</tr>
<tr>
<td>7th June 2013</td>
<td>Dolnholm village</td>
</tr>
<tr>
<td>2nd May 2013</td>
<td>Milimani village</td>
</tr>
<tr>
<td>9th March 2013</td>
<td>Land mawe village</td>
</tr>
<tr>
<td>27th October 2009</td>
<td>Paradise A village</td>
</tr>
<tr>
<td>3rd Nov 2011</td>
<td>Hashi Energy oil deport</td>
</tr>
<tr>
<td>29th November 2011</td>
<td>Mtongwe village</td>
</tr>
<tr>
<td>7th December 2012</td>
<td>Jamaica village</td>
</tr>
</tbody>
</table>

The local and church leaders who were interviewed suggested that law enforcement could lead to fire disaster mitigation and management in the following ways. They said that law enforcement could be improved through community policing and increasing the number of policemen and stations within the huge slum.
Figure 4.4 Effect of law enforcement of fire disaster mitigation and management

The data collected indicated clearly that community enlightenment/education leads to fire disaster mitigation and management. This was claimed by 93% of the respondents residing or working in Mukuru Kwa Njenga slum in Nairobi County. The respondents were particularly positive about the contributions of the enlightenment that they received from the Red Cross Society and G4s Security Company on fire drills that has greatly equipped them with the skills in fighting fires. This has also been boosted by about 300 people that were trained by the Fire safety Association of Kenya in 2012. These trainings have however been irregular and not well coordinated. Goal Kenya has been carrying out sensitization workshops since 2006 in various community/church halls and continues to do so up to now. Respondents claimed that these trainings have not only helped them manage fires better but have also tried to stop them. The Red Cross has also targeted teachers in schools and educated them on pre and post fire disaster response and it is hoped that they impart the same knowledge to their pupils.
According to Lyall (1996) the main reason for failure in disaster mitigation and management is the lack of awareness on the part of the slum communities. There is a big agreement between what Lyall (1996) said and research findings since 65% of the respondents said that lack of awareness lead to high fire disaster risk in Mukuru Kwa Njenga slum in Nairobi County. 89.8% of the respondents claimed that county administrators have a role to play in the enlightenment and education of residents on fire disaster mitigation and management.

Figure 4.5: Responses on effect of community enlightenment /education on fire disaster mitigation and management.
Table 4.5 Responses on residents education /enlightment in fire disaster mitigation and management in the Mukuru Kwa Njenga

<table>
<thead>
<tr>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents get fire disaster preparedness training and education</td>
<td>33%</td>
</tr>
<tr>
<td>Residents attend educational meetings on fire disaster preparedness training</td>
<td>20.6%</td>
</tr>
<tr>
<td>Residents are generally aware of the potential fire disasters</td>
<td>41.3%</td>
</tr>
<tr>
<td>The levels of enlightenment on fire disasters are high in Mukuru slum</td>
<td>10%</td>
</tr>
<tr>
<td>Residents' involvement and enlightenment could help in the mitigation and management of fire disasters</td>
<td>55.9%</td>
</tr>
<tr>
<td>Residents feel and actually get empowered to prevent and deal with fire disasters from enlightenment offered</td>
<td>30%</td>
</tr>
</tbody>
</table>

From the table above, 33% of the respondents felt that the residents get fire disaster preparedness training and education in church halls and Tom Mboya community Hall and open grounds. This is mainly disseminated by the Red Cross Society, G4s and Fire safety Association of Kenya and corroborates with a study on fire safety management in government buildings in Nairobi carried out by Macharia (2010), where 38% of the respondents claimed that they have never been given basic training on fire safety and less than half of the respondents have ever participated in a fire drill. This translates to 67% of the respondents claiming that they do not get fire disaster preparedness training and education. This is an alarming percentage that may not know what to do to prevent or deal with fire disasters. The respondents (20.6%) said residents attend educational meetings on fire disaster preparedness training. These meetings are usually organized and addressed by the Red Cross Society especially after a fire disaster and the number of
residents attending dwindles with time due to the fact that most of the residents are poor and are more bothered by putting some food on the table and not their security. The Red Cross attracts trainees by providing to them meals and other inducements like food staff to keep them listening if not attending. This happened at Star of Hope primary school and Tom Mboya community hall after the Sinai fire tragedy in September 2011 that claimed more than a hundred Kenyans. This was reported by the Standard Newspaper on 13th of September 2011. The above attendance rate is a very low percentage and it means that the residents are generally not aware of what to do during fire disasters. 41.3% of the respondents said that residents are generally aware of the potential fire disasters while only 10% claimed that the levels of enlightment on fire disasters are high in Mukuru slum. 55.9% of the respondents said residents’ involvement and enlightenment could help in the mitigation and management of fire disasters while 30% of the residents suggested that Mukuru residents feel and actually get empowered to prevent and deal with fire disasters from enlightenment offered. The respondents further suggested that community education and enlightenment by county public administrators like village elders, chiefs and sub county administrators could further reduce fire disasters or help in their mitigation and management by training them on fire drills, fire fighting coordination, fire prevention and being more careful in handling fire. Public administrators interviewed claimed that there are regular training/educating workshops that they organize in church and community halls but have fizzled out due to poor attendance and lack of training continuity since they have now become untenable. These meetings are usually attended by the unemployed youths who are normally idling in the slum. The county administrators have been helping in clearing the access roads during fire disasters as well
as in alerting fire fighting agencies such as the city fire department, National youth service, Private companies like the G4s and the National disaster centre.

Viwandani H2 o self help group which is headed by Mrs. Mugoiri and usually deals selling of water to the slums assists during fire disasters by providing free water to help in putting out the fire. This self help group works jointly with Jamaica Youth group that focuses on fire fighting in the slums.

Church organizations such as St. Monica’s Catholic Church women group, Viwandani PCEA women guild and men fellowship help in counseling and provision of building materials.

4.5.2 The role of County administration in post disaster reconstruction following fire disasters in Mukuru Kwa Njenga slum in Nairobi County

One of the objectives of the research study was to determine the role of county administrators post disaster reconstruction following fire disasters in Mukuru Kwa Njenga slum in Nairobi County.

Majority of the respondents (87%) were of the view that disaster response plans help in fire disaster mitigation and management while 13% were of the opinion that disaster response planning does not help in fire disaster mitigation and management in Mukuru Kwa Njenga slum in Nairobi County. After the fire tragedy in May 2009 in Mukuru Slum, the government gave 637 households a total of Ksh. 3000 each as one month’s rent to help in relocating the residents who were affected. In the same year, Kenya power and lighting company made great efforts in trying to forcefully evict or remove slum residents who were living under high voltage power lines. This was in an effort to evade future fire disasters. According to church and local leaders who were interviewed, the Sinai fire
tragedy, just like many other incidences was complicated by lack of access roads in the slums. The government has tried to open up access roads in the slum but hasn’t succeeded yet due to the vast nature of the slum and mushrooming of other structures on roads initially cleared. The respondents interviewed said that efforts to relocate the victims from the pipeline bore fruits but other structures have since come up. The victims in this tragedy also got counseling and humanitarian aid from the government and well wishers at Tom Mboya community hall and Star of hope primary school. This counseling was as well aired on Kenyan television stations to try and assist as many as possible. Fire drills were conducted by the Red Cross after the fire tragedies in Sinai and land mawe villages in 2013. Goal Kenya has been organizing sensitization workshops in the slum with a view to not only avoid fire disasters but also to enable the residents respond in a more coordinated and knowledge based way.

![Figure 4.6](image)

Figure 4.6 Responses on effect of disaster response planning in fire disasters mitigation and management

40
Of the respondents, 81% felt that Mukuru Kwa Njenga slum in Nairobi County doesn't have a good fire disaster response plan. This claim agrees very well with the claim that fires are common in Nairobi's slums but urban disasters receive a “baffling” lack of response from aid agencies, indicating major gaps in urban disasters preparedness. (United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA, 2009) and totally contrasts an assessment of fire safety management in government training institutions done by Moses K. et al (2012) where 92% of the respondents confirmed the availability of fire extinguishers in government training institutions and 52% indicated that there are fire hydrants and 84% of the respondents agreed that firefighting equipments are strategically placed. An interview with the deputy county commissioner in charge of Makadara, Madam Margret Mbugua on 28th of June 2013, indicated that there are disaster management committees in place from the village to sub county level. These are charged with the responsibility of coordinating post disaster activities as well as trying to preempt eminent fire disasters by taking action or reporting to the commissioner for action. The respondents (76%) claimed that equipments used in fire disaster response are out of date hence unhelpful in fire disaster response. These equipments include water buckets and small fire extinguishers located at chief's camps. 92% of the respondents claimed that planning fire disaster response is extremely important. Of the respondents, 93% felt that planned urban settlement and planned housing in urban informal settlements is very important in fire disaster response planning. However due to lawlessness and self centeredness of individuals living in the slum, they continue to build structures, tap electricity and endanger their lives and that of their neighbours as suggested by the tragedy of the commons. Mukuru slum resident’s interest
in fire disaster response planning is unimportant as was claimed by 60% of the respondents. The same number of respondents does not attach a lot of value to planned response to fire disasters. Fire disasters response and management is hampered by unplanned urban settlement as was suggested by 89% of the respondent. It was the opinion of majority respondents (77%) that fire disaster response planning by the County administration in Mukuru Kwa Njenga slum is inadequate while 19% think that it is totally lacking. This fact could be corroborated with the many fire disasters that we continue to witness in the slum and as suggested by Mr. Kioko the leader of Sinai original village having witnessed the most recent fire incidence on 17th September 2013.

Figure 4.7 Responses on frequency of County administrators educating the residents and stakeholders on fire disaster response plans

The graph above indicates that there is handily any disaster response plans education conducted by county administrators in Mukuru Kwa Njenga slum in Nairobi County. A majority of the respondents (43%) claimed that there has not been any disaster response plans education while 23% are unsure whether there has been any community enlightenment on fire disaster response plans carried out by the county public
administrators. There are however efforts in this direction from the Red Cross and other organizations as suggested by the local leaders who were interviewed. The County administrators do not carry out disaster response plans checks in Mukuru Kwa Njenga slum nor do County administrators provide feedback after evaluating the slum communities’ disaster response plans further worsening the situation. The county public administrators interviewed claimed that they give the feedback but the residents are ignorant and do not attend meetings intended to give such information. The slum settlement is claimed to be a total hindrance to disaster response plans since there are no access roads in the slum to enable on time fire disaster response. This problem is compounded by the housing structures in Mukuru slum that are not safe at all for they are constructed with highly flammable materials such as cartons, timber and woodcuts. The respondents said that disaster response planning help in availing fire fighting equipments on time, training the community on response activities and coordination in fire disaster mitigation and management.

92% of the respondents claimed that in deed reconstruction coordination helps in fire disaster mitigation and management. However, according to 67% of the respondents, Mukuru Kwa Njenga slum in Nairobi County doesn’t have a good post fire disaster reconstruction coordination that could help in disaster mitigation and management while 73% claim that county administrators do not carry out post fire disaster reconstruction coordination and leave the task to Nongovernmental organizations such as the Red Cross and G4s. In post disaster reconstruction, the administrators claimed that they have been useful in mobilizing funds and issuance of documents damaged during disasters. They
also undertake food and basic necessities distribution assisted by community health workers self help group led by Esther Muchiri.

Other groups are also involved in post disaster reconstruction. These include Viwandani pamoja youth group headed by Mr. Gatugi. This group assists in rescuing people as well as creating way for fire engines during disasters. Mukuru slum development programme lead by Ms Grace offers counseling to victims as well as providing proper materials for reconstruction.

Figure 4.8 Responses on effect of reconstruction coordination in fire disaster mitigation and management

It was accepted by 59% of the respondents that post fire disaster reconstruction coordination could hasten recovery from fire disasters in Mukuru Kwa Njenga thereby mitigating the adverse effects of such a disaster. 43% of the respondents are happy with post fire disaster reconstruction coordination by groups other than the County administrators. The respondents (64%) said that post fire disaster reconstruction is not adequately coordinated in Mukuru Kwa Njenga slum while 50% claimed that the area
doesn’t have post fire disaster reconstruction coordinators. Those who acknowledged the presence of fire disaster reconstruction coordinators in the slum claimed that they are not adequately knowledgeable or available during fire disasters. It was evident that post fire disaster reconstruction coordination was hindered by unplanned slum settlement and that recovery from fire disasters takes unnecessarily long due to lack or poor reconstruction coordination. According to the deputy County commissioner Makadara the government has made efforts in opening up access roads within the slum. 70% of the respondents claimed that lack or poor pre and post fire disaster reconstruction coordination leads to other disasters.

As depicted below, the respondents rated the County administrators post disaster reconstruction coordination as very good (8.20%) good (11%) average (37.30%) poor (42.50%) while 1% remained non committal on their effectiveness. These figures indicate the need to reevaluate the role of county public administrators in post fire disaster reconstruction coordination.
Post fire disaster reconstruction coordination was also noted to help in disaster mitigation and management by ensuring access roads are left and housing units are constructed using less fire vulnerable materials. This coordination also helps victims to get counseling that they need to carry on with their lives. This was done after the Sinai fire tragedy by Dr. Frank Njenga and others on site and national television channels.

4.5.3 Other factors that help/may help in fire disaster mitigation and management in Mukuru Kwa Njenga.

The respondents identified a combination of other factors that could help in fire disaster mitigation and management. Most of the respondents (53%) residing in the slum and those interviewed claimed that the county public administrators must take a bigger role in fire disaster management and reconstruction. 28% of the respondents claimed that poverty alleviation could help the residents take less risks thereby avoiding fire disasters,
9% suggested that a total reconstruction of the informal settlement was useful, 5% felt that the informal settlement should be formally allocated to the inhabitants ensuring all fire safety requirements are observed while another 5% thought government policies in relation to informal settlements could be of use. The county public officers who were interviewed were of the opinion that the solution lies with the residents of Mukuru Kwa Njenga taking the responsibility of ensuring their own safety from fire disasters by reporting cases of lawlessness and the members of illegal gangs that make it difficult for law enforcers and by becoming more careful when handling fire.
5.1 Introduction

This chapter presents a summary of the study, conclusions from the findings and recommendations for further and possible action on the role of county public administration officers.

5.2 Summary of the study

The purpose of the study was to analyze the role of county public administration officers in fire disaster management and mitigation in Mukuru Kwa Njenga slum in Nairobi County. The study specifically set out to investigate the causes of fire disasters, investigate the role of County administration in disaster response planning and the role of County administration in post disaster reconstruction after fire disasters in Mukuru Kwa Njenga slum.

In an effort to achieve these objectives, a questionnaire was designed, given out and analyzed by the researcher in close consultation with the supervisor. A total of 210 respondents were included in the sample. The return rate of the questionnaire was 89.3%. By the use of the responses from the 180 respondents who returned the questionnaire, the researcher was able to answer the research questions. Responses were also received through interviews conducted by the researcher and general observations by the researcher.

It was clear from the responses that there are several causes of fire disasters among them illegal connections, carelessness, ignorance, natural accidents and lawlessness. Illegal connections, ignorance and lawlessness had the highest tally. The role of County
administration in disaster response planning was found to be wanting while their role in post disaster reconstruction after fire disasters in the slum has left big room for improvement.

Other than these factors, poverty levels pushed people into risking their lives as was the case during the Sinai fire tragedy where residents were burned to death as they were trying to scope spilled oil from the pipeline. The unplanned settlement was a great hindrance to rescue missions due to lack of access roads.

5.3 Study Conclusion

This study aimed at investigating the causes of fire disasters, the role of County administration in disaster response planning and the role of County administration in post disaster reconstruction after fire disasters in Mukuru Kwa Njenga slum. The following conclusions were drawn from the findings of the study.

i) On analyzing the responses, the causes of fire disasters in Mukuru Kwa Njenga slum were evident and the overall view of the respondents was that most of the fire tragedies are avoidable and only a few cases are unavoidable. The avoidable fires were said to result from lawlessness such as tapping of electricity illegally, ignorance, unplanned settlement leading to lack of access roads and carelessness. Though there are disaster response committees, set up at various levels, they have not been able to adequately address these causes due to political interference that leads to unplanned settlement, existence of illegal gangs that make it impossible to maintain law and order and general ignorance of the residents due to their generally low level of education and failure to attend trainings organized by various groups on fire disaster avoidance and preparedness.
ii) On the issue of disaster response planning, the respondents clearly indicated that there were no adequate plans to tackle disasters in the slum. The residents have not been adequately trained on how to handle fire disaster though according to public administration officers interviewed the residents are not keen to train even when such trainings are offered for free. It was noted that there are however commendable efforts by the Red Cross society to have fire disaster response plans. They have trained a few residents who may not match the large slum. They have as well provided a few fire fighting equipments kept in the chiefs camps for use. The county public administration officers on the other hard have tried to mobilize the residents to attend such trainings but have not been effective. Each county administration officer is expected to attend at least two monthly meetings with the residents on disaster preparedness (Deputy County commissioner Makadara). However, the effectiveness of such meetings is brought to doubt by the ever raising number of fire disasters. Response plans are also thwarted by the illegal gangs who benefit from the status quo. The public administrators have not succeeded in eliminating those groupings to enhance lawlessness. They have not also provided firefighting equipments to the residents and the few available ones are not readily available at the fire sports.

iii) On the issue of post fire disaster coordination, the residents were in agreement that the public administrators are involved. They however, suggested that the nongovernmental organizations such as the Red Cross and Goal Kenya did much more after fire disasters in the slum. The county public administrators are quoted to have helped in the relocation of residents in May 2009 by giving them money to pay for rent elsewhere. Kenya power and lighting company and the Kenya pipeline have made efforts to remove the residents from
potentially very risky areas but they have meet unequalled resistance from the residents and illegal gangs. Humanitarian assistance has also been channeled through the county public administrators to distribute to deserving victims. This happened at Tom Mboya community hall and Star of Hope primary school after the Sinai fire tragedy.

v) It was evident from the respondents that the problem of fire disasters could be associated to high poverty levels in the slum. Thus, there is need to try and alleviate poverty that makes residents to engage in risky behaviour such as illegally tapping electricity and scoping oil. The respondents were of the opinion that a total change in the structure of the slum could be attained through formal allocation of the land to the residents ensuring that adequate measures such as availing access roads were adhered to.

5.4 Recommendations from the study

On the basis of the research findings and the conclusions drawn, the following recommendations have been made.

First, it is recommended that the county public administrators address the causes of fire disasters in the slum with a view to eliminating or minimizing the causes. This could be done by more trainings and enforcement of laws to the letter. The administrators must take decisive action on the issues of people building under high power lines and on pipelines thereby endangering their lives. They should relocate all those affected or remove them from such potential danger.

Secondly, the county public administrators should take a leading role in fire disaster response planning. Most of the fire disasters have been mismanaged leading to huge losses. With proper fire disaster response plans, some of the incidences may be
contained if not avoided altogether. They should be seen to lead the other groups that provide the same rather than acting as mere coordinators.

Finally, the county public administrators should take a leading role in post fire disaster efforts coordination. This role is currently the reserve of nongovernmental organizations such as the Red Cross, Church leaders and other humanitarian groups.

5.4 Suggestions for further research.

From the findings, the following areas have been recommended for further research.

i) The effect of poverty level on fire disaster management and mitigation.

ii) The ways of resolving the unplanned urban settlements in connection to fire disasters management and mitigation.
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APPENDICES

Appendix I – Questionnaire

Dear respondent,

This questionnaire is aimed at studying the role of County administration in fire disaster mitigation and management in Mukuru Kwa Njenga Slum in Nairobi County. Your experience as a resident/stakeholder or administrator of the area will give a correct picture of these roles. Your response will be kept strictly confidential and will only be used for the purpose of this academic research.

Please respond to the questions frankly and honestly

Part 1

Background Information

(i) Kindly indicate your gender. Male ( ) Female ( )

(ii) Which among these is your age bracket?

- Below 25 years ( )
- 26-35 years ( )
- 36-45 years ( )
- 46-55 years ( )
- Above 55 years ( )

(iii) Please indicate your designation.

- Administrator ( )
- Politician ( )
- Ordinary resident ( )
- Opinion leader ( )
- Teacher ( )
- NGO ( )

55
[iv] Indicate the duration you have lived/worked in Mukuru Kwa Njenga.

Less than three years ( ) Three to ten years ( )
More than ten years ( )

PART 2

Section 1: What are the causes of fire disasters in Mukuru Kwa Njenga slum in Nairobi County?

✓ Natural accidents
✓ Illegal electrical connections
✓ Ignorance/lack of knowledge
✓ Lawlessness
✓ Carelessness
✓ Others..............................

Section 2: The role of County administration in community fire disaster mitigation and management in Mukuru Kwa Njenga slum

Please tick as appropriate.

i) In your opinion, does law enforcement lead to fire disaster mitigation and management?
ii. Do you have laws governing the conduct of the residents in terms of settlement in Mukuru Kwa Njenga slum? Yes ( ) No ( )

iii. Are the laws put into practice/enforced to improve on fire disaster mitigation and management?
Yes ( ) No ( )

iv. Does law enforcement result in community safety from fire disasters? Yes ( ) No ( )

v. How do the residents in your village respond to law enforcement aimed at protecting them from fire disasters?

1. 
2. 
3. 
4. 

v) Does abiding by the law help mitigate and manage fire disasters? Yes ( ) No ( )

vi) Are you comfortable with the law enforcement levels in Mukuru Kwa Njenga in relation to fire disasters? Yes ( ) No ( )
vii) Which of the following do you think is an indicator of lawlessness in Mukuru Kwa Njenga that may lead to fire disaster?

1. Illegal electricity connections
2. Unplanned settlements
3. Unplanned housing structures
4. Resistance to law enforcers
5. Others

(specify)........................................................................................................

viii) Using the key below, please respond to the questions.

KEY

SA-Strongly agree  A-Agree  D-Disagree  SD-Strongly disagree

<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
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<tbody>
<tr>
<td>County administration have a role to enforce the law to mitigate and</td>
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<tr>
<td>manage disasters</td>
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<tr>
<td>Law enforcers are welcome in Mukuru Kwa Njenga slum</td>
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<tr>
<td>In case of an emergency it will be easy to get assistance from law</td>
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<tr>
<td>enforcers</td>
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<tr>
<td>Mukuru Kwa Njenga slum is safe from disasters</td>
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<tr>
<td>Residents illegally tap electricity endangering their lives</td>
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<tr>
<td>Law enforcement is hindered by politicians</td>
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<tr>
<td>Rapid unplanned urbanization affect disaster preparedness?</td>
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</tbody>
</table>
ix) How else in your opinion does law enforcement lead to fire disaster mitigation and management?

1. ............................................................................................................................

   ........

2. ............................................................................................................................

   ........

3. ............................................................................................................................

   ........

4. ............................................................................................................................

   ........

x) Does community enlightenment/education lead to fire disaster mitigation and management?

   Yes ( ) No ( )

xi) Does lack of awareness lead to high fire disaster risk? Yes ( ) No ( )

xii) Does the county administration have a role to play in community enlightenment/education resulting in disaster mitigation and management? Yes ( ) No ( )
Using the key below, please respond to the questions.

**KEY**

SA-Strongly agree       A-Agree       D-Disagree

SD-Strongly disagree

<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Lack of awareness contributes to great fire disasters in slums</td>
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<tr>
<td>The Mukuru slum residents get fire disaster preparedness training and education</td>
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<tr>
<td>The Mukuru slum residents attend educational meetings on fire disaster preparedness training in large numbers</td>
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<tr>
<td>The residents are generally aware of the potential fire disasters that are likely to befall them</td>
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<tr>
<td>The levels of enlightenment on fire disasters are high in Mukuru slum</td>
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<tr>
<td>Mukuru slum residents’ involvement and enlightenment helps in the mitigation and management of fire disasters</td>
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<tr>
<td>I feel and actually get empowered to prevent and deal with fire disasters from enlightenment offered.</td>
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</tbody>
</table>
xiv) How else in your opinion does educating/enlightening the community assist in fire disasters mitigation and management?

1. ..................................................................................................................
2. ..................................................................................................................
3. ..................................................................................................................
4. ..................................................................................................................

Section 3 – The role of County administration in disaster response planning and post disaster reconstruction in Mukuru Kwa Njenga slum in Nairobi County

i) Does disaster response planning help in fire disaster mitigation and management in Mukuru Kwa Njenga slum in Nairobi County? Yes ( ) No ( )

ii) Mukuru Kwa Njenga slum in Nairobi County has a good fire disaster response plan

   Yes ( )
   No ( )

iii. The equipments used in fire disaster response are up to date hence helpful Yes ( ) No ( )
iv. The following are statements relating to fire disaster preparedness and response. Please respond to them by marking the appropriate space.

**KEY**

EI-Extremely important  I-important  N-Neither  UI-unimportant  EUI-Extremely Unimportant

<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>EI</th>
<th>I</th>
<th>N</th>
<th>UI</th>
<th>EUI</th>
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</thead>
<tbody>
<tr>
<td>Planning fire disaster response is thought to be</td>
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<tr>
<td>Fire disaster response planning to mitigate and manage disasters is</td>
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<tr>
<td>Planned urban settlement as a fire disaster response planning is</td>
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<tr>
<td>Planned housing in urban informal settlements is</td>
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<tr>
<td>What value do you give to a planned response to fire disasters</td>
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<tr>
<td>The Mukuru slum residents interest in fire disaster response planning is</td>
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<tr>
<td>Open and cordial explanations of fire disaster response plans may be rated as</td>
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<tr>
<td>What level of importance do you attach to fire disaster response planning</td>
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</tr>
</tbody>
</table>
v) Fire disasters response and management is hampered by unplanned urban settlement

Agree [ ] Disagree [ ]

vi) What is your view on fire disaster response planning by the County administration in Mukuru Kwa Njenga slum?

vii) How frequently does the County administration educate the residents and stakeholders on fire disaster response plans?

1. Annually
2. Quarterly
3. Weakly
4. Daily
5. Never

viii) Does the County administration carryout disaster response plans checks in your area?

Yes ( ) No ( )

ix) Does the County administration provide feedback after evaluating your communities' disaster response plans?

Yes ( ) No ( )

x) The slum settlement is a total hindrance to disaster response

Yes ( ) No ( )

xi) There are no access roads in the slum to enable on time fire disaster response

63
xii) The housing structures in Mukuru slum are not safe at all for they are not constructed with fire disaster response facilities. Yes ( ) No ( )

xiii) How else does fire disaster response planning help in disaster mitigation and management?

1. ..........................................................
2. ..........................................................
3. ..........................................................

xi. How else in your opinion does the County administration provide fire disaster response planning?

1. ..........................................................
2. ..........................................................
3. ..........................................................
4. ..........................................................

xii) Does the county administration reconstruction coordination help in fire disaster mitigation and management in Mukuru Kwa Njenga slum in Nairobi County? Yes ( ) No ( )

xiii) Mukuru Kwa Njenga slum in Nairobi County has good post disaster reconstruction coordination that helps in disaster mitigation and management. Yes ( ) No ( )
xiv) Does the county administration carry out post fire disaster reconstruction coordination in Mukuru Kwa Njenga slum to help in disaster mitigation and management?  
Yes ( ) No ( )

xv) Does post fire disaster reconstruction coordination hasten recovery from disasters in Mukuru Kwa Njenga? Yes ( ) No ( )

xvi) Using the key below, please respond to the questions.

**KEY**  
SA-Strongly agree  A-Agree  D-Disagree  SD-Strongly disagree

<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
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<tbody>
<tr>
<td>The residents are happy with post fire disaster reconstruction coordination by groups other than the County administration.</td>
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<tr>
<td>Post fire disaster reconstruction is adequately coordinated in Mukuru slum</td>
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<tr>
<td>This area has no post fire disaster reconstruction coordinators</td>
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<tr>
<td>The post fire disaster reconstruction coordinators are adequately knowledgeable</td>
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<tr>
<td>The unplanned slum settlement is a total hindrance to post fire disaster reconstruction coordination</td>
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<tr>
<td>Recovery from fire disasters take unnecessarily long due to lack or poor coordination</td>
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</tbody>
</table>
xvii) Does lack or poor pre and post fire disaster coordination in reconstruction lead to other disasters?

xviii) What is your rating of the county administration as post disaster reconstruction coordinators?
1. Very good 3. Average
2. Good 4. Poor

xix) How else in your opinion does post fire disaster reconstruction coordination help in disaster mitigation and management?

1. 
2. 
3. 

xx) Please mention other factors that are not captured in this questionnaire that in your opinion help/may help in fire disaster mitigation and management in Mukuru Kwa Njenga.

1. 
2. 
3. 
4. 
5. 

Please check to ensure that you have not skipped any questions inadvertently.

Thank you for your time and cooperation.
Appendix ii - Research guideline: Source: Researcher

<table>
<thead>
<tr>
<th>Activities</th>
<th>May – August 2012</th>
<th>Sep – May 2012/13</th>
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<tr>
<td></td>
<td>Early</td>
<td>Mid</td>
</tr>
<tr>
<td>Consultations on topic &amp; objectives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Writing &amp; typing of proposal</td>
<td>*</td>
<td></td>
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<tr>
<td>Submission of proposal to supervisor</td>
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<td></td>
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<tr>
<td>Defense</td>
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<td></td>
</tr>
</tbody>
</table>

Appendix iii - Budget Source: Researcher

<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated cost in Ksh.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary</td>
<td>39,000</td>
</tr>
<tr>
<td>Photocopying</td>
<td>18,000</td>
</tr>
<tr>
<td>Typing &amp; printing</td>
<td>38,000</td>
</tr>
<tr>
<td>Binding</td>
<td>18,000</td>
</tr>
<tr>
<td>Library &amp; internet</td>
<td>27,000</td>
</tr>
<tr>
<td>Airtime</td>
<td>10,000</td>
</tr>
<tr>
<td>Transport</td>
<td>48,000</td>
</tr>
<tr>
<td>Miscellaneous costs</td>
<td>47,000</td>
</tr>
<tr>
<td>Total</td>
<td>245,000</td>
</tr>
</tbody>
</table>
### Appendix iv: Observation schedule Source: Researcher

<table>
<thead>
<tr>
<th>Activities</th>
<th>July-Sep 2012</th>
<th>Oct-Dec 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk factors/Activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness levels/campaigns</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Law enforcement/Law compliance</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Response plans/preparedness</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>
View of Mukuru slum

Source: http://www.sdinet.org/blog/categories/nairobi/
Airial View of Mukuru slum

Source: Ariana K. MacPherson, (SDI Secretariat)
Open sewerage canal in a slum

Source: http://www.sdinet.org/blog/categories/nairobi/
A street in Mukuru slums.

Source: http://www.covenantfoundation-kenya.org/about-mukuru.html