

UNIVERSITY OF NAIROBI

Department of Sociology and Social Work

M.A Project research

**Community organizing in achieving
resilience to disasters: The case of fire
disasters in Gikomba market**

By

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**A research project submitted in partial fulfillment of degree of Master of
Arts in Disaster Management in the University of Nairobi.**

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Declaration

This is my original work and has not been presented for any degree in any other university.

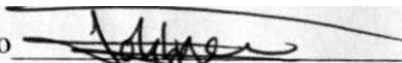
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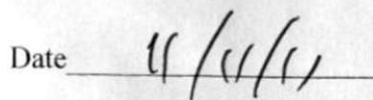
Declaration by supervisor

This research project has been submitted with my approval as the University of Nairobi supervisor.

Dr. Robinson Mose Ocharo



Date



Dedication

This research project is dedicated to my loving husband Ngunyi, my children Wangari and Wanja for their support and encouragement during my studies.

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My acknowledgements go to the Almighty God for life and ability to study. I also acknowledge Dr. Robinson Mose Ocharo for his intellectual supervision, patience and guidance. My family for the support and encouragement they gave throughout my studies. Mr. Mutinda of Kenya Red Cross Society, Mr. Kimanyano of Nairobi Fire Service, Mr. Kariuki of Ministry of Special Programmes, Mr. David and John, leaders of Gikomba security team and Gikomba market community for their valuable time. I also acknowledge all other individuals and teams involved either directly or indirectly for their valuable contributions.

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Abbreviations

DN	Daily Nation
DoD	Department of Defense
EWS	Early Warning Systems
FEMA	Federal Emergency Management Agency
GoK	Government of Kenya
IASC	Inter-Agency Standing Committee
ICS	Incident Command Systems
IFR and CRCS	International Federation of Red Cross and Red Crescent Societies
INGO	International Non Governmental Organization
ISDR	International Strategy for Disaster Reduction
KA	Kenya Army
KFFF	Kenya Fire Fighters Forum
KFSM	Kenya Fire Safety Manual
KNBS	Kenya National Bureau of Statistics
KP	Kenya police
KPLC	Kenya Power and Lighting Company
KJRCS	Kenya Red Cross Society
MoSP	Ministry of state for special programmes
MSE	Microsoft Excel
N'CBD	Nairobi's Central Business District
NCC	Nairobi City Council
NDOC	National Disaster Operation Center
NFPA	National Fire Protection Association
NFS	Nairobi fire service and ambulance
NGO	Non Governmental Organization
NHIF	National Hospital insurance Fund
NYS	National Youth Service
OCHA	Office for the Coordination of Humanitarian Affairs
SMEs	Small and Medium Size Enterprises

SPSS	Statistical Package of Social Sciences
I'NISDR	United Nations International Strategy for Disaster Reduction
UNOCHA	United Nations office for the coordination of Humanitarian Affairs
GCS	Global Crisis Solution
^ CA	Vulnerability and capacity Assessment

Abstract

Davis and Wall (1992:90, 91), in their disaster crunch model argue that a natural phenomena by itself is not a disaster until it encounters a hazard. Community based disaster management calls for people's participation, appropriate framework and structures, so that the community takes ownership of disaster management process. It aims at reducing vulnerabilities by strengthening capacities; with a goal of building disaster resilient communities.

Structural-functional theory and disaster theories were used. The former views society as a complex system whose parts work together to promote solidarity and stability. The latter theory argues that a natural phenomenon by itself is not a disaster until it encounters a hazard. The study was carried out in Gikomba market using descriptive study design and used both probability and non probability types of sampling. Stratified random sampling and proportionate random sampling was used in order to determine the sample size for each unit. Purposive sampling technique was used for key informants.

Among 143 respondents, 36% were females and 64% were males. Cumulatively, 58% of the respondents indicated that they had witnessed between 1-5 fire incidents. The findings revealed those who have been in business longer have experienced fewer fires incidents than those who have been in the business for a short period. Majority of the respondents indicated that there was high probability of fire to break in the market and highlighted the trigger factors with ease. The findings revealed that 67% of the respondents belonged to informal organized group within the market. Great potential in these groups was observed as they had financial intellectual and human resources within them.

There is need to carry out a VCA where elements at risk are identified, hazard mapping done and general factors contributing to vulnerability identified. It would also be important to train traders on fire prevention, response and mitigation. Gikomba community's capacities and skills in disaster resilience need to be identified while at the same time, recognizing various degrees of vulnerabilities determined by age, gender and physical disabilities.

Three areas for further research include finding out why Gikomba community traders have not organized themselves towards fire disaster resilience; ascertain whether mismanagement of solid waste serves as trigger to fire disasters in Gikomba and probe why the frequency of fire disasters in Gikomba are increasing.

CHAPTER ONE

1.0 Background

Davis and Wall (1992:90, 91), in their disaster crunch model argue that a natural phenomena by itself is not a disaster until it encounters a hazard. This illustration brings to the fore fundamental understanding on cause and effect processes that lead to disaster. A hazard is the trigger event that sets off the disaster. The unsafe conditions make the population vulnerable to a particular hazard which is in turn caused by dynamic pressures within the society. Vulnerability does not happen instantly but has notable progression from underlying conditions, to dynamic pressures, and finally to unsafe conditions. A disaster therefore happens when a hazard impacts on people who are vulnerable to that hazard thereby causing untold suffering, loss of life and livelihoods as well as damage to property. Although disasters impact individuals, they more "accurately represent collective stress situations occurring at a community level as a result of major unwanted consequences. It is has been argued that one of the defining aspects of a 'disaster' is the sense that a group of people make of an event - the shared identity that they, together, have been affected by a major catastrophe." (Winkworth et al 2009:5).

"Within the last decade, parallel efforts in various regions of the world called for a paradigm shift from the prevailing emergency management framework to disaster risk reduction to reverse the increasing trend in disaster occurrence and loss, especially from small and medium scale disasters" (Loma, 2007:0). The paradigm shift has come as a result of realizing the importance of playing a proactive instead of a reactive role in building disaster resilient communities. To achieve this, "local communities play a pivotal role prior, during and after disaster strikes. Community participation has therefore been recognized as an additional element in disaster management necessary to reverse the worldwide trend of increasing frequency and loss from disasters, build a culture of safety and disaster resilient communities, and ensure sustainable development for all" (Lorna, 2007:1). The paradigm shift has also been triggered by the need for proactive disaster management activities and the significant role of local communities through community based approach. The community based approach is said to correct the defects of the top-down approach which has over the years failed to address local needs, ignored the potential of local resources and capacities thus increasing people's vulnerabilities.

GCS (ND:2) Defines vulnerability as Vulnerability is a "set of prevailing or consequential conditions, which adversely affect the community's ability to prevent, mitigate, prepare for or respond to hazard events". There are many aspects of vulnerability, arising from various physical, social, economic, and environmental factors. Examples may include poor design and construction of buildings, inadequate protection of assets, lack of public information and awareness, limited official recognition of risks and preparedness measures, and disregard for wise environmental management. Vulnerability varies significantly within a community and over time. In the urban areas the most vulnerable sectors are generally the urban poor and informal sector. The elderly, the physically challenged, women and children are also vulnerable due to their care giving and social roles (Loma, 2007:1). This scenario necessitates community specific risk reduction measures which are identified after an analysis of the community's disaster risk which may include hazards, vulnerabilities and capacities and consideration of varying perceptions of disaster risk.

Community based disaster management is where local people take the lead in building their capacity to manage their own disaster risk reduction and early warning processes (IFRC and RC 2009:63) and indeed the entire cycle of disaster management of mitigation, preparedness, response and recovery (Jeannette and Kathleen 2006:3) or relief, rehabilitation, reconstruction, mitigation, preparedness (Davis and Wall, 1992) depending on how one views it. Community based disaster management calls for people's participation, appropriate framework and structures, so that the community takes ownership of disaster management process. Community based disaster management aims at reducing vulnerabilities by strengthening capacities; with a goal of building disaster resilient communities. By linking disaster risk reduction with development the community is able to address vulnerable conditions and causes of vulnerabilities while at the same time working closely with external support and facilitation from the government and other non-governmental organization. Involvement of community members, particularly the most vulnerable sectors and groups in the whole process of risk assessment, identification of mitigation and preparedness measures, decision making and implementation is important because the community directly benefits from the risk reduction and development process. The community also needs to be empowered where people's options and capacities are increased; more access to and control of resources and basic social services through concerted action. This cannot be achieved without social organization.

People acting together over time to produce a desired result create a relationship called an organization. "Organizations are put together to amass and use power to accomplish a purpose. Organizations are built around issues that clarify the desire for change, motivate participants and serve as a focus for action" (Homan, 2004:43). Organizations can have varying degrees of structure while organizers must understand the context in which they are acting. The perception of a shared threat can overcome social economic, racial or nationality differences and bring people together. "Organizations are built around the work of well functioning small groups who can mobilize and reach out to other people and assets. They can start very small and then develop through action" (Homan, 2004:45).

Community organizing is therefore a process where people who live in proximity to each other come together into an organization that acts in their shared self-interest. A core goal of community organizing is to generate durable power for an organization representing the community, allowing it to influence key decision-makers on a range of issues over time. In the ideal, for example, this can get community organizing groups garner more bargaining power and representation before important decisions are made. The irregular way in which collective community action occurs prior to, during, or after a disaster demonstrates the power that communities have to naturally get organized. Namboodripad, (2008:35) states that "local populations organize not only to help their neighbours, but also to revitalize and reconstruct the social basis of their communities." Kramer (1969:91) further argues that "organized people recognize the problems that confront them in their common social and physical environment, to decide on courses of action to meet those problems, and to bring needed resources. Until communities are adequately organized to carry out these functions and tasks, they will be unable to meet the other problems whose solution requires effective community action."

Namboodripad (2008:26) further argues that "The ability to cope with disasters lies deep in our prehistoric past, which has taught us that organizing is the most efficient and effective means to survive. Most of this organizing takes place without our really being cognizant that it is a special type of behavior. Whenever an outside threat such as a disaster occurs or is likely to occur, signals and social cues are set in motion that prompt internal social group cohesion." The apparent chaos and threatening nature of disasters as unusual, uncontrollable, and many time unpredictable events facilitate the development of organizational means to restore order and normalcy. The fact that there is strength in numbers and that group and community strength brings synergy when individuals cooperate has apparently been one of the most effective means of coping and surviving. Historical forms of organizations dealing with

disaster events (before, during, and after) reflect how well communities can adapt to the sources of disasters as well utilize social capital in minimizing disruption by dealing with their own challenges. Community organizing makes use of the voluntary efforts of a community's members acting jointly to achieve economic or other benefits. As opposed to commercial ventures, gains that result from community organizing automatically accrue to persons in similar circumstances who are not necessarily members, for example residents in a geographic area or in a similar socioeconomic status, or persons having conditions or circumstances in common who benefit from gains won by the organizing effort.

UNISDR (2009) defines resilience as "the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions." In other words resilience means the ability to "resile from" or "spring back from" a shock. The resilience of a community in respect to potential hazard events is determined by the degree to which the community has the necessary resources and is capable of organizing itself both prior to and during times of need. A mobilized, organized and empowered community is well able to accommodate and recover from the effects of a disaster in a timely and efficient manner and that is a valuable connection that exists between community participation and resilience.

Fire can be described as the rapid burning of combustible material with the evolution of heat and usually accompanied by flame. "It is one of man's essential tools, control of which helped propel him forward on the path of civilization. Evidence in Kenya in 1981 and in South Africa in 1988 suggest that the earliest controlled use of fire by hominids date from about 1,420,000 years ago (Schneid and Collins, 2000:9)". The first human beings to control fire gradually learned its many uses. Not only did they use fire to keep warm and cook their food, but they also learned to use it in fire drives in hunting or warfare, to kill insects, to obtain berries and to clear forest of underbrush so that game could be better seen and hunted. Most widespread among prehistoric and later indigenous people like the Hadzabe of Tanzania, Batwa of Rwanda and Ogiek of Kenya just to name a few, is the friction method of producing fire. The simple fire drill, a pointed stick of hard wood twirled between the palms and pressed into a hole on the edge of a stick of softer wood, is almost universal. (Schneid and Collins, 2000:9).

Schneid and Collins (2000:10) state that "fire is the third leading cause of accidental death in the home and at least eighty percent of all fire deaths occur in residences". This is an indicator that uncontrolled fire remains one of the major causes of death and property damage in today's society and more so the developing countries. Proper preparedness in the event of a fire in a given area of operations or facilities is essential to safeguard life and minimize property damage and loss. The key to minimizing or controlling the cost and death toll of disaster is prevention. This is not to say that we can prevent natural disasters but we can minimize their effects.

1.1 Problem statement

In developing countries, planning and attitudinal commitment to disaster risk reduction is characterized by apathy. This scenario leaves individuals and organization to develop and execute their own disaster risk reduction strategies in the midst of escalating disaster events. Republic of Kenya (2006:17) in its unpublished *national disaster management policy* state that "the occurrences of fire disasters are not new to Kenya and are a major risk in poorly planned and overcrowded settlements with temporary housing structures. As a result, property worth billions of shillings have gone to waste, infrastructure destroyed, lives lost and injuries inflicted. Many people have been impoverished as a result and some even suffered psychologically.

Even though the government has put some efforts towards disaster management in Kenya, a lot needs to be done. The government has a national disaster operation centre charged with the responsibility of responding to disasters occurring in the country. Through the draft disaster management policy (yet to be tabled in parliament), fire precaution and fire service bills have been proposed for enactment. This is upon recognition of the fact that fire is an economically important disaster of relatively high frequency in Kenya, requiring prevention, mitigation and preparedness.

Many other factors have in effect contributed to the increased potential for fire occurrences. These include intensive urbanization, high population concentration within Nairobi which has a spillover effect to Gikomba. According to the Kenya Bureau of Statistics recent report on population census, there are over 3.1 million people living in Nairobi (KNBS, 2009). Increased crime rate in relation to arsonist activities, rising poverty levels and inadequate

legislation and enforcement procedures/processes could be looked as indirectly contributing to increased fire disasters within Nairobi.

Fire occurrence in informal markets is not a new phenomenon. On 7th January 2011, electronic and print media reported that a fire gutted down more than 80 stalls that had garments in Uhuru Market, within (Jhuru estate, Nairobi). The cause of the fire was not established. There was a fire in Gikomba the 8th of September 2010. The NFS intervention appeared very near yet far as fire engines could not access the centre of the market because of congestion of people, hand carts and goods concentrated on the roads leading to burning areas. There was no casualty but property worth millions of shillings was lost for these families whose livelihoods depend on this 'dead capital' which is uninsured in terms of property and assessment management as legal and trade instruments are far from recognizing these small businesses in regards to their worth. 'There has to be some thinking of redesigning the informal settlement layout develop emergency exits and display them.' (UNOCHA 2010)

Fire in Gikomba and Nairobi county in general can be termed as fairly unpredictable, the magnitude varying and damages devastating and unlucky and part of everyday risk, more so of running a business. Regardless of the time they occur, fires in Gikomba have been characterized by consuming structures and their content, thus posing great threat to lives, livelihoods and the environment. There has however been proactive efforts to fight these fires which in most times have proven to be ineffective (Daily Nation Sept. 7th 2000, 1,2.)

Year 2000 saw four major markets burnt. On 5th August 2000, 600 retail shops were destroyed at Kangemi market; on 28th August 2000 Freemark center was razed down; and on 14th December 2000, Garissa lodge was burnt down. On 6th September, 2000, Gikomba market suffered the same fate; Cloth stalls and go-downs stacked with bales of used clothes were destroyed in the huge fire which ripped through Gikomba market from midnight and could not be contained easily as firemen attempted to extinguish it for nine hours. The market is the distribution point for imported used clothes sold throughout the country. Hundreds of traders dependent on the markets supplies were counting their losses. The flames were first noticed over Gikomba at midnight, spreading rapidly, burning wooden stalls inside the massive city council brick and tile sheds used by bulk cloth importers and sellers. The eastern side of the market neighboring Kamukunji grounds, Shauri Moyo estate and country bus station was reduced to ashes. The poorly equipped NFS ran out of water, which got backing from Kenya

army but their engines came too late to save most of the stalls. The army too ran out of water. Shocked traders, many of whom had invested heavily at the market, wailed uncontrollably when they arrived in the morning to find scorched iron sheets and charred frames where their stalls had been. (D.N. Sept. 7th 2000, 1,2)

In all these cases of fire disaster property worth millions of shillings was destroyed. Chief Fire Officer was quoted attributing to the department's failure to put out the fire which burnt the four major market on two main factors; That the structures were made up of inflammable material and the structures were usually congested to the extent that even if firemen were to arrive at the scene in good time, they would not gain access to the fire.

A field survey evaluating on fire prevention, detection, fighting and fire safety measures among the users of Gikomba market revealed that there are no fire detection devices and that fire fighting methods do not suffice (Gaitho, 2001: 59). The survey indicated that there are no open spaces around the market which would serve as fire assembly points portable fire-fighting equipment are nonexistent and in cases where there are hose reels, they are non-functional. The water supply which would be used for firefighting from the city council was not adequate. The escape routes had been blocked by either built-up stalls or stored wares. It is a fact that response operations have in most times been slow, inefficient - thus in many cases leading to massive losses of lives and livelihoods. In Gikomba, fire disaster response system does not satisfy the response requirement as to ensure adequate fire control. As a result, fire outbreaks almost certainly lead to major losses.

Given the current paradigm shift, it is prudent to establish the extent to which Gikomba market community is vulnerable and with precision, understand the underlying conditions, dynamic pressures and the unsafe conditions that they operate within. It shall also be of interest to know whether Gikomba market community has systems and structures that help them get mobilized and organized in a participatory manner thereby making them achieve resilience to fire disasters.

1.2 Research questions

1. What is the level of awareness regarding fire hazards by Gikomba market community?
2. Who is involved in management of fire disaster in Gikomba market and what is their level of participation?

3. To what extent is the community in Gikomba market mobilized and organized to prevent, mitigate, prepare and respond to fire disaster in future?

1.3 Objectives of the study

The study had a broad objective of investigating the relationship between community mobilizing and organizing in relation to achieving resilience to fire disaster in Gikomba market. To achieve this goal, the study aimed at achieving the following specific objectives;

1. To establish the extent to which the Gikomba community is informed on the management of fire disasters.
2. To examine the role of other stakeholders in the management of fire disasters in Gikomba market.
3. To examine the extent which Gikomba community has been mobilized and organized to participate in the management of fire disasters.

1.4 Scope and limitation of the study

Geographically, the study was limited to Gikomba market in Nairobi; examining community organizing in achieving resilience to fire disasters. Within Gikomba market, people who are involved in any other trade other than wholesalers and retailers for second hand clothes and shoes were not covered. Due to limited time and finances, the study did not focus on other informal markets in Nairobi.

The study was limited to establishing the knowledge Gikomba market community had on levels of vulnerability to fire disasters. These included community's knowledge on possible causes of fire, fire detection and response. The study also sought to know the stakeholders who were involved in fire management, their level and nature of engagement, the structures in place and the specific roles they played in detecting, preventing and responding to fire disasters in Gikomba market. The study sought to identify and document existing formal and non formal groups and organizations within Gikomba market, whose mandate is fire disaster management. Readily available resources and capacities within these groups were also identified.

1.5 Definition of terms

Disaster

A catastrophe, mishap, calamity or grave occurrence in any area, arising from either natural or manmade causes, or by accident or negligence which result in substantial loss of life or human suffering, or damage to and destruction of property or damage to or degradation of environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area (Namboodripad, 2008:1).

Disaster management

A continuous and integrated process of planning, organizing coordinating and implementing measures which are necessary or expedient to prevent danger or threat of any disaster, mitigation or reduce the risk or severity or consequences of any disaster, capacity-building and preparedness to deal with any disaster, prompt response to any threatening disaster situation or disaster, assessing the severity or magnitude of effects of any disaster, evacuation, rescue and relief, rehabilitation and reconstruction ((Namboodripad. 2008:26)

Preparedness

Activities, programs, and systems developed and implemented prior to a disaster/emergency that are used to support and enhance mitigation of, response to, and recovery from disaster/emergencies (NFPA, 2007:5).

Community

A community consists of a number of people with something in common that connects them in some way and that distinguishes them from others (Homan, 2004:9) or simply put, it is a group of people located in the same geographical area having the same culture, goals, interest and challenges.

Mitigation

Measures which can be taken to minimize the destructive and disruptive effects of hazards and thus lessen the magnitude of a disaster... an activity which can occur at any place at any time; before, during or after a disaster, during recovery or reconstruction (Maskrey, 1989).

Resilience

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions. (UNISDR, 2009:24)

Community mobilization

Refers to efforts made from both inside and outside the community to involve its members (groups of people, families, relative, peers, neighbors or others who have a common interest) in all the discussions, decisions and actions that affect them and their future. (IASC, 2007:93)

Vulnerability

Vulnerability is a set of prevailing or consequential conditions, which adversely affect the community's ability to prevent, mitigate, prepare for or respond to hazard events. Vulnerability has two interacting forces: the external force, which is exposure to shock, stress and risk; and internal force, which is defenselessness, in other words a lack of means to cope (GCS, ND: 2)

CHAPTER TWO

Literature review and theoretical framework

2.0 Introduction

Fire is the rapid burning of combustible material with the evolution of heat and usually accompanied by flame. It is both friend and foe to man and his environment. It is one of man's essential tools, control of which helped propel him forward on the path of civilization (Schneid and Collins. 2000:9). For combustion or burning to occur, three things are necessary; heat, oxygen and fuel. This is commonly known as the triangle of combustion or Fire triangle. Combustion will continue as long as these three factors are present. Removing one of them leads to the collapse of the fire triangle and combustion stops. Heat sources include compression of gases, electrical energy, friction, chemical action, hot surfaces and open flame. While air normally contains 21% of oxygen, approximately 16% oxygen is required for burning to occur. Some materials contain sufficient oxygen within their make-up to support burning. Fuel can be derived from liquids, solids or gases. (HM fire service inspectorate, 2001:47)

2.1 General information on fires

Fires are classified according to their fuel. Class A fires are made of up solid materials, usually organic, leaving glowing embers. Class A fires are the most common, and the most effective extinguishing agent is generally water. These fires can be prevented through good housekeeping practices such as keeping all areas free of trash and the proper disposal of greasy rags. Class B fires are based on gases or flammable liquids. Flammable liquids may be divided into two groups, miscible and immiscible; the former denoting those that mix with water and the latter those that do not. Extinguishing agents are therefore chosen according to whether the liquid fuel will mix with water or not. The extinguishing agents include water spray, foam, light water, vaporizing liquids, carbon dioxide and dry chemical powders (HM fire service inspectorate, 2001:79).

Class C fires are fires involving gases or liquefied gases in the form of a liquid spillage, or a liquid or gas leak like methane, propane and butane. Form or dry chemical powder can be used to control fires involving shallow liquid spills, though water in the form of spray is generally used to cool the containers. Class D fires feed on flammable metals, such as magnesium. These fires are difficult to extinguish and must be suppressed by use of a special fire fighting agents (Wallace and Webber, 2007:277/8). Extinguishing agents containing water are ineffective, and even dangerous. Carbon dioxide or dry chemical powders containing bicarbonate is also hazardous if applied to most metal fires. Powdered graphite, powdered talc, soda ash, limestone and dry sand are normally suitable to extinguish class D fires. (HM fire service inspectorate, 2001:79)

Choice of fire extinguishing method therefore depends on the type of fuel that is burning. Each class of fire has some basic concepts that can be used to reduce the likelihood of occurring. Overall, extinguishing fires involves starvation thereby limiting fuel; smothering thereby limiting oxygen and cooling, thereby limiting temperature. (HM fire service inspectorate, 2001:80-81). One can for example switch off a car's ignition or pull the fuel cut-off; remove from the path of a fire any combustible materials, such as curtains or liquefied gas that may fuel the flames and shut a door on a fire to cut off oxygen supply; smother flames with a smoke blanket or other impervious substances (Newman, Crawford and Peterson. 2001:22).

2.1.1 Global view of fire disasters

Fire disasters cause the greatest loss of life and property and have devastating impact on communities. This is because fire spreads quickly and there is hardly sufficient time to gather valuables or make contacts and in a short time, fire disaster can become life-threatening. Heat and smoke from fire can be more dangerous than the flames since fire produces poisonous gases that make one disoriented and drowsy. The threat of wild fires for people living near wildland areas or using recreational facilities in wilderness areas is real. Dry conditions at various times of the year and in various parts of the world greatly increase the potential for wild fires, an occurrence that can be caused by climate change due to rising temperatures contributing to periods of extreme drought in some areas.

Fire disasters have earned their place in Guinness World Records. According to Guinness World Records (2001:34,35) the worst fire disaster took place during the sack of

Moscow Russia, in May 1571 where approximately 200,000 people were reported to have perished as a result of fires started by invading Tartars. In Guangzhou China, the worst theater fire disaster occurred where a total of 1670 people were killed in May 1845 while the worst circus fire disaster took place in Hatford, Connecticut, USA on July 6th 1944 when a total of 168 people died in a fire which broke out during a circus performance.

The unprecedented tragedy of 11 September 2001 claimed the lives of 344 New York City fire personnel in just one incident. Although the rescue efforts saved thousands of civilian lives, this was the largest single-event loss of life sustained by modern-day fire service personnel in war or peace times. In contrast, a total of fire fighters lost at once prior to September 11th was 24 and this is during an incident that occurred over 100 years ago (Guinness World Records 2004:32). At the same time, fires' worst destruction of natural environment was reported in 1997 as a result of arson making it the worst year in recorded history for the destruction of environment. The largest and most numerous were in Brazil, where a 1600km front was affected (Guinness World Records 2006:100-101).

2.1.2 Fire safety measures

Ideally, the following fire prevention measures can be done according to FEMA (2001). Smoke alarms can be installed as they decrease chances of dying in a fire by half. Smoke alarms should be placed on every level of residence and office and need regular testing and cleaning and should be replaced once every 10 years. Escape routes should be reviewed often and that windows functionality checked to ensure they can be opened from inside. Occupants of the buildings should be taught how to stay low to the floor when escaping the fire. Use of flammable items should not be used indoors and their storage should be well ventilated. Chimneys should be insulated and constructed at least three feet higher than the roof. Electrical wiring should be checked by an electrician and ensure wiring does not run under rugs, over nails, or across high-traffic areas. It is highly recommended that A-B-C-type fire extinguishers are installed and training is done on their use.

2.1.3 Reporting a fire and emergency procedures

Standard instructions on what to do in case of fire clearly displayed at every convenient point as follows:

- Sound the alarm and shout fire.
- Call the security officer, the Nairobi fire brigade, the police and St. John ambulance.
- If you hear fire alarm.
 - o Leave building through the nearest available exit,
 - o Close but do not lock doors and windows behind you.
 - o Report at the fire assembly point,
 - o Do not stop to collect personal belonging.
 - o Never re-enter the building for any reason unless authorized to do so.
 - o Do not take risks.

2.1.4 Emergency evacuation procedures

Do not panic.

Vacate the building immediately.

Evacuate using the staircase only.

Alert others as you vacate.

Do not run or make unnecessary noise.

Do not use elevators.

If alarm sounds which you are in the lift, a light at the next stop and use staircase.

Do not remain in the lavatory' or confined space.

Follow instructions from marshals.

Do not re-enter the building until directed to do so.

2.1.5 Responding to fire disasters

A fire spreads very quickly and so does panic. Therefore, it is important to warn any people at risk and alert the emergency fire experts immediately and maintain calmness and encourage those at risk to do the same. When leaving a burning building for example, it is

prudent to take three simple actions: i) activate the fire alarm, ii) close each door behind you as you go without locking and iii) do not run, but walk quickly and calmly (Newman, Crawford and Peterson 2001:22). To escape a fire, one should check closed doors for heat before opening them. If door is closed and is the only means of escape, the back of the hand should be used to feel the top of the door, the doorknob, and the crack between the door and door frame before opening it. The palm of the hand or fingers should not be used to test for heat - burning those areas could impair ability to escape a fire using a ladder and crawling. If the door is hot, one should not open it and alternative escape like the window should be used. If the door is cool, the door should be opened slowly and ensure fire and/or smoke is not blocking the escape route. If escape route is blocked, the door should be shut immediately and an alternate escape route used. If clear, one should leave immediately through the door close it.

Any fire in a confined space creates a highly dangerous atmosphere that is low in oxygen and may be contaminated by carbon monoxide and toxic fumes. A burning or fume filled building should therefore be avoided and left to the fire fighting experts. If trapped in a burning building, it is advisable to go to a room with a window and shut the door and ask for possible help. If passing through a smoke filled room, keep low as the air at the floor level is the clearest. If you have to escape through a window, go out feet first and lower yourself to the full length of your arms before dropping to the ground. If casualties have their clothes on fire, it is important direct them to stop, drop and roll, asking them not to panic and running around or outside if in a building as this action will only fan the fire.

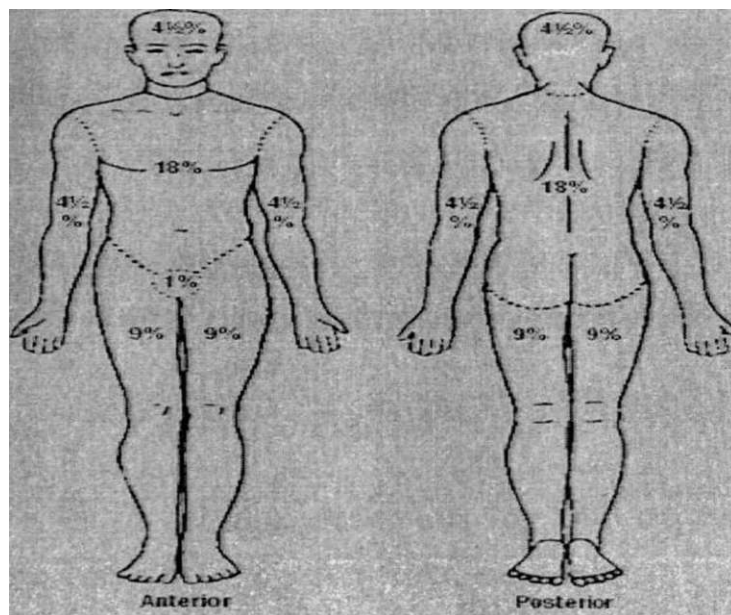
If arriving at a fire or burns incident, it is important to stop, observe, think, and not rush in. This is because there may be flammable or explosive substances, as gas, or toxic fumes or a risk of electrocution (Newman, Crawford and Peterson 2001:22). A general precaution is that one should never attempt to fight a fire unless the fire emergency service has been contacted and the volunteers sure that they are not putting their safety at risk.

2.1.6 Dealing with burns incidents

The approach to an accident resulting in burns is complicated by the presence of fire. Generally, burns result from dry heat, extreme cold, corrosive substances, friction, or radiation, including the sun's rays; scalds are caused by wet heat from hot liquids and vapours. (Newman, Crawford and Peterson 2001:155). It is advisable to assess the extent of the area affected by

the burn, as the greater the surface area, the greater the fluid loss and risk of shock. By using a simple formula, the "rule of nines" that divides the body into areas of about nine per cent, one can calculate the extent and decide what medical aid is needed. The rule of nines serves as a guide to work out the extent of a burn as a percentage of the body's surface area. See figure 1 below where head burns account to 9%; front and back of the trunk 36% each; posterior and anterior of both arms account for 18% ; the crotch 1% while the posterior and anterior of both legs account for 36 %, giving a total of 100%. Generally, a partial-thickness burn of one per cent or more must be seen by a doctor. A partial thickness burn of over 9% will cause shock to develop and the casualty will need hospital treatment and any full thickness burn requires hospital treatment. (Newman, Crawford and Peterson 2001:158).

Figure 1 the rule of nines



Adopted from University of Wisconsin (2008) newsletter *Assessing Burns and Planning Resuscitation: The Rule of Nines* from <http://www.uwhealth.org/emergency-room/assessing-burns-and-planning-resuscitation-the-rule-of-nines/12698>

2.1.7 Structural fires

Structural fires have similar characteristics the world over with exception of the magnitude and level of destruction which is highly dependent on the level of vulnerability. In the United States of America for example, while new building standards and materials and increased regulation of residential and business construction have reduced the hazard

tremendously, fires are still all too common. "Buildings still burn, and large buildings can burn with a great many people in them... in past [sic] cases, the victims were trapped in crowded facilities when the fires broke out. Fire exits were blocked, locked, or nonexistent. Better fire codes and inspections have reduced the number of mass casualties fires in the United States, but violations of the regulations continue to pose significant risks." (Waugh, 2005:110)

High-rise building fires pose even more problems. The design of high-rise buildings exacerbates the risk. Having stairways, elevators, electrical systems, and water systems located in or near the centre of the building complicates access by firefighters, ventilation and the evacuation of residents. The very height and complexity of the buildings complicates fire response. Firefighters may have to climb many floors before reaching the fire. Offices are often arranged differently on each floor, so that personnel unfamiliar with the building may have a difficult time finding particular rooms or simply moving from one part of the floor to another. Steel and concrete construction may interfere with radio communication and the distance from the command centre to the fire floor may further distort communication. In effect, tall buildings may become "smokestacks" with smoke rising through stairwells and elevator shafts to the upper floors. While automatic sprinkler and other fire suppression systems may reduce the likelihood of large fires, system failures may occur and building owners and local fire officials have to monitor the systems to ensure that they are functional (Waugh, 2005:111).

Globally, fire disasters do not come singly but also affect the vulnerable at all levels. Under social vulnerability, the society is affected and disrupted. This is determined by a number of factors like the population, gender, age group of people and literacy level of a given community. The political and economic vulnerability is also determined by the strength and or weakness of structures in place while environmental vulnerability is determined by factors like environmental management and the presence and or absence of secondary hazard risk which occur when natural hazard events create new hazards.

2.2 Fire Disasters in Kenya

In recent times, fire disaster occurrence has increased in both frequency and in magnitude a situation that is worsened by the unpredictability and high possibility of occurrence anywhere, anytime. Among the majority of disasters ranking high up in Kenya have been fire disasters. "These fires have either been accidental or deliberate but preventable if negligence is minimized and regulatory and institutional weaknesses addressed" (Republic of Kenya 2006:17 *national disaster management policy*)

In January 2011 for example, an inferno razed Kenvatta National Hospital's cardiology wing. Attempts by the hospital staff to combat the fire using available extinguishers were not effective as they hit the blaze from the top, instead of aiming at the base. The water hydrants at the facility were reportedly dry, while others had low pressure (The Standard Feb. 1st 2011, 18). On Saturday 29th January 2011, 23 houses were gutted down by a heavy inferno in Isiolo. Neighbours used everything they could lay their hands on to try put out the fire. But with the inferno out of control, it was going to take more than a branch and water drawn in a small container to extinguish it. In the end, the only option left was to stone the wooden building in an attempt to bring it down and stop the fire from spreading to the neighbouring house (The Standard Feb. 1st 2011,2).

The National Fire Code (1963) provides that, every building or structure shall be so constructed, arranged and maintained so as to avoid undue danger to the lives and safety of its occupants from fire, smoke, fumes or resulting panic during the period of time reasonable necessary for escape from building or structure in case of fire or any other emergency. The National Fire Code (1963) further provides that, exits shall be provided of kinds, numbers, location and capacity appropriate to the individual building structure, with due regard to the character of occupancy, the number of people exposed, the fire protection available and the height and type of construction of the building or structure to afford all occupants convenient facilities for escape.

The fire policy guideline vision is to make Kenya a fire safe country while the mission is that the government of Kenya aims at applying the best local and international standard of fire safety practices (Republic of Kenya: 2005 p. 10) The policy lays out various objectives among which Kenya will develop and promote the concept of a fire safe society and will promote the

culture of fire protection and preservation of life, property and the environment. Its aims include establishing linkages with a number of ministries, department and organizations in order to rationalize and consolidate to provide a risk based approach to fire safety for more efficient and effective compliance and enforcement. The draft document has identified a number of departments dealing with fire safety policy and legislation issues.

Fire fighting challenges that hinder the smooth fire fighting operations in the city-include late calling and giving wrong address of the fire disaster; poor road network, traffic jams, poor telephone communication network, unplanned building structures, structures built on fire hydrants and their mark posts and hostile members of the public who stone firemen and fire engines on arrival to disaster scenes among others (Republic of Kenya, 2005). Other challenges include lack of public awareness, lack of fire early warning system, lack of trained personnel and conflict of interest between stakeholders. Lack of clear government policy on fire management and laxity in the enforcement of bylaws where available and lack of specific laws dealing with fire disaster issues are also short-comings.

It is regrettable that disaster management in Kenya has not been viewed as an integral part of central development planning. Mostly, disaster management has been reactive and ad hoc. (Pelling and Wisner, 2009:90) Existing literature shows that continued susceptibility arises from disaster management not being mainstreamed in government development agendas. This is despite the fact that disaster preparedness; mitigation measures and response mechanism have been identified as important elements in effective disaster management.

2.3 Community organizing

Communities are organized social units that comprise of social groups (Macionis 1999:198) and a relatively large group of people who have common values and interests, relatively enduring ties, frequent face to face interaction, and a sense of being close to one another (Calhoun, Light and Keller, 1995:542). These are important building blocks of societies that foster personal development and common identity as well as perform various tasks. As such, they have flexibility to adapt to change, and accommodate their physical and social environment. They represent the cumulative social assets of small groups, interdependent relations built on family-clan, friendship and economic networks. Commonality is based on being ecological distinct into natural and or social areas. On this basis, they represent one of the major mechanisms for societal survival, development, and growth. In such communities,

disasters are socially constructed normative situation where efforts are made to protect and benefit some social resource whose existence is perceived to be threatened. (Namboodripad 2008:35)

Formal organizations are large, secondary groups that seek to perform complex tasks efficiently they are classified as utilitarian, normative or coercive depending on the members reasons for joining (Macionis 1999:198). Communities are the natural outcome of human organizing. They are pervasive throughout the world, organic in nature, composed of indigenous populations and structured on the basis of family and economic strata. Communities are not only found in rural areas but can exist within the midst of large urban centers. Unlike bureaucratic structures that exemplify public administrations, however, a community's structure is kept intact mainly through a social process of consensus building. This process is continually renewed through basic social interactions that foster symbolic identification and attachment to the community. Some of these encompass family and friendship networks, social and voluntary group formation, and economic investment and interdependencies. (Namboodripad 2008:54).

Disasters and systematic disruptions occur when the social organizations and units of a considerable segment of society cease to function. Generally, whole communities are involved; but disaster may be said to exist whenever collective and individual actions that are previously structured and made predictable by the elements and processes are made unpredictable by the impact of either external or internal forces. In urban Germany in World War II, whole communities were so organized that bombardment became a part of life. Fire control, management of debris, protection and repair of communication and utilities, and the handling of the dead and injured became routine. In military operation, too, disasters occur only when the organization deteriorates so that attack, defense, and retreat are not controlled or are unpredictable (Loomis 1967: 130).

2.3.1 Role of community organizing in disaster situation

Hazards have always been pan of the world's reality, and the communities inhabiting hazard-prone areas adapted strategies to deal with extreme events, using their own capabilities, skills, talents, knowledge and technologies. Learned from their ancestors and their own experiences, these adaption strategies are made part of their tradition and culture. When hazards strike, people have always been ready to cope and did not rely much on support and assistance from outsiders, such as government. In this historical perspective, local people have

no concept of vulnerability (Bankoff, Frerks and Hilhorst 2006:119). Local people view disaster as part of normal life and develop coping strategies to adjust to a fast-changing environment. It appears, however, that in the context of globalization, these coping strategies are no longer effective. This trend particularly highlights the political vulnerability of local people; since they can hardly influence or block decision on laws, policies and programmes that harm them (Bankoff, Frerks and Hilhorst 2006:115).

The ability to cope with disasters and emergencies lies deep in our primordial past, which has taught us that organizing is the most efficient and effective means to survive. Most of this organizing takes place without our really being cognizant that it is a special type of behavior. It seems the most natural thing to do when facing danger, channeling us to improvise defensive types of behaviours that overtime are reinforced in our families, small groups and communities. Whenever an outside threat such as a disaster occur or is likely to occur signals and social cues are set in motion that prompt internal social group cohesion. The most amazing thing about this process is that it seems never-ending (Namboodripad 2008:26).

Historical forms of organizations dealing with disaster events (before, during, and after) reflect how well we have adapted to the sources of disasters (from natural to man-made) as well as how we utilize social capital in minimizing disruption. It is easy to imagine how our ancestors, living in caves or wandering the plains developed the means to cope with and survive what were then considered natural events even those that we today consider disasters such as floods, fires, and extreme weather conditions. The process of adaptation, migration and inventiveness were all used in conjunction with adaptive forms of organization to maximize survival. The result has been a type of organizational disaster subculture that emerged when disaster threats were perceived to be eminent. This pattern of community participation in the development and activation of organized behavior to face disasters has remained in place over thousands of years (Namboodripad 2008:29). Most likely, it is the apparent chaos and threatening nature of disasters as unusual, uncontrollable, and many time unpredictable events-facilitated the development of organizational means to restore order and normalcy. The fact that there is strength in numbers and that group and community strength accumulates when individuals cooperate has apparently been one of the most effective means of coping and surviving. In most cases, the latent organization structures that have evolved over thousands of years to mitigate disasters lay dormant and were only activated when needed.

Community organizations and the involvement of local communities is a particularly important and may manifest itself in different ways in different communities, varying not only with the uniqueness of each community but with community size, income, homogeneity, history of cooperation, political participation and other issues. These communities and neighborhoods often have unique knowledge of the disaster experiences of an area, as well as coping mechanisms to deal with local disasters unrealized by planners. The involvement of community-based organizations, community leaders and NGOs which work at the community level are vital parts of the entire disaster management cycle.

2.3.2 Community participation

The process of disaster preparedness and mitigation should be owned and controlled as much as possible by the affected population, making use of their own support structures, including local government structures. As people become more involved, they are likely to become more hopeful, more able to cope and more active in rebuilding their own lives and communities. At every step of disaster continuum, efforts should be made to support local participation, build on what local people are already doing to help them and avoid doing what they can do for themselves. The community or its representative's members have an equal partner role in all major decision and activities undertaken in partnership with various government and non-government organizations and community actors (IASC 2007:94)

Donahue and Williamson (1999:4) outline critical steps in community mobilization as follows:

- Recognition by community members that they have a common concern and will be a more effective if they work together ('we need to support each other to deal with this')
- Development of the sense of responsibility and ownership that comes with this recognition("This is happening to us and we can do something about it')
- Identification of internal community resources and knowledge, and individual skills and talents ('who can do, or is already doing, what; what resources do we have; what else can we do?').
- Identification of priority issue ('what we're really concerned about is...')
- Community members plan and manage activities using their internal resources.
- Growing capacity of community members to continue and increase the effectiveness of this action.

Adapted from Donahue and Williamson (1999), Community Mobilization to mitigate the impacts of HIV/AIDS. Displaced Children and Orphan Fund

Inability to consider community concerns has doomed more public initiatives than any other single factor. Policies are often formulated at a great distance from where they are to be implemented without any input from those most affected. In some cases, programmes and projects are destined to fail from the start because they directly contradict accepted social or cultural practices of the people from whom they are designed (Dixon, James and Sherman, 1989). Regrettably, many agencies tend to think of behalf of the victims not realizing that disaster prone communities might interpret their circumstances differently. If we want disaster response to be meaningful, we need to give affected communities a voice and to recognize their risk perception, as well as their active role in exploring strategies that ensure livelihood security in the long term. The latter means that we should strengthen these strategies in order to address the root cause of their vulnerability, and to broaden our perspective beyond the disaster response framework. The aim of disaster response is not to bring things back to where they were before the disaster, but to increase people's capacities and to strengthen their coping strategies in order to deal more effectively with adverse events. (Bankoff, Frerks and Hilhorst 2006:125-126)

2.4 Theoretical framework.

2.4.1 The structural-functional theory.

Structural-functional theory views society as a complex system whose parts work together to promote solidarity and stability. People's lives are guided by social structure, which translates to relatively stable patterns of social behavior.

The structural-functional paradigm owes much to the ideas of Auguste Comte, who sought to promote social integration during a time of tumultuous change. Hubert Spencer contributed to the same theory by likening society to structural parts of the human body which includes skeleton, muscles, and various internal organs. These elements are interdependent, with each contributing to the survival of the entire organism. Spencer reasoned that, in the same way social structures are interdependent, working in concert to preserve society. Talcott Parsons saw society as a system, identifying the basic tasks any and all societies must perform to survive and the ways they accomplishing these tasks.

Robert Merton further expanded our understanding on social function by pointing out that the consequences of any social pattern are likely to differ for various categories of people in a society. He noted that not all the effects of any social structure benefit everyone in a society - thus social dysfunctions are undesirable consequences for the operation of society. The structural-functionalism paradigm has however been critiqued as it focuses on stability at the expense of conflict and change making it conservative as it tends to ignore inequalities of social class, race, ethnicity, and gender, which can generate considerable tension and conflict. (Macdonis 1999:16-17).

This theory is based on the view that society is like a living organism likened to a human body which includes skeleton, muscles, and various internal organs. These elements are interdependent, with each contributing to the survival of the entire organism—in this case the society.

Similarly, the community in Gikomba can be viewed as a living organism, a social structure that is interdependent, each contributing to the survival of the entire community. The economic backbone of Gikomba business community therefore is the continual and harmonious functioning of both internal and external structures. By the time the second hand shoes and clothes arrive in Nairobi's Gikomba market, bureaucratic processes have been followed and all types of resources mobilized and utilized at the macro level. At the micro level, we also see the same inter-dependability. The business people do not have the same economic strength or same interest. Some get involved as importers of the goods. Others are mainly wholesalers and or retailers.

Gikomba community operates as a complex system. To promote stability, solidarity, social and economic integration, all parts of this complex system must work harmoniously and in an interdependent way to forge forward its survival. If these structures and system do not function, then Gikomba business community automatically becomes dysfunctional, suffers disequilibrium and conflict is likely to arise. To ensure smooth running Gikomba community affairs, the community requires to continually analyze its operational status, by identifying its strengths, weaknesses, opportunities and threats.

2.4.2 Disaster theory

Davis and Wall (1992:90, 91), in their disaster crunch model argue that a natural phenomena by itself is not a disaster until it encounters a hazard. This illustration brings to the fore fundamental understanding on cause and effect processes that lead to disaster. A hazard is the trigger event that sets off the disaster. The unsafe conditions make the population vulnerable to a particular hazard which is in turn caused by dynamic pressures within the society. Vulnerability does not happen instantly but has notable progression from underlying conditions, to dynamic pressures, and finally to unsafe conditions. A disaster therefore happens when a hazard impacts on people who are vulnerable to that hazard thereby causing untold suffering, loss of life and livelihoods as well as damage to property.

Tearfund (2006:11-19) has explained in a progressive manner the two models that have been developed to help build an understanding about disasters as discussed below. The 'Crunch' model explains what a disaster is and why it happens. The 'Release' model looks at how disasters can be avoided or minimized. To reduce the risk of disaster, the factors that cause risk should be addressed. This means working against all the components of the crunch model. Action may be necessary at local, national and even international levels.

2.4.2.1 The disaster crunch model

The crunch model shows that a disaster happens only if a hazard meets a vulnerable situation.



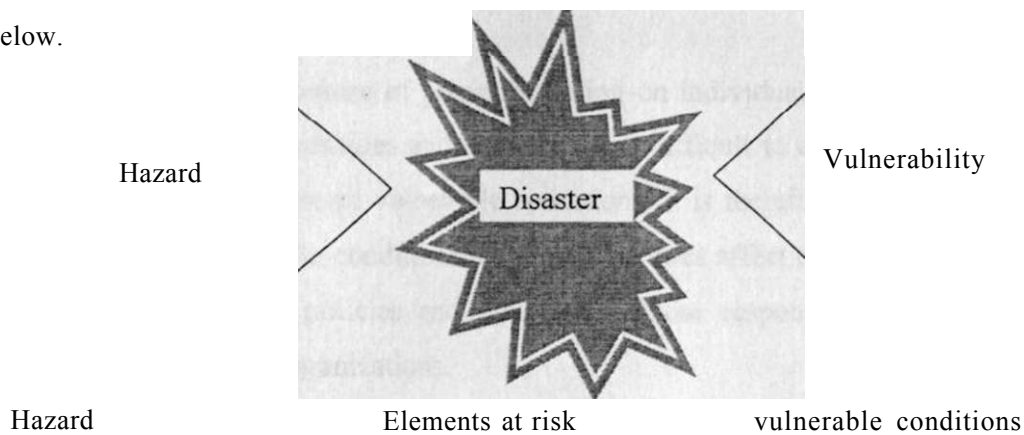
2.4.2.2 Hazard

A hazard is an event that could lead to danger, loss or injury. A fire in one part of the world which is highly populated can lead to the loss of many lives, livelihoods and infrastructure. However, fire of the same magnitude in another country and in a forest may

cause less devastation. A hazard by itself is therefore not a disaster. Only when the hazard meets a vulnerable situation does a disaster occur.

2.4.2.3 Vulnerability

People are vulnerable when they are unable to adequately anticipate, withstand and recover from hazards. Poverty contributes to vulnerability among many other factors. That is why fire may cause a disaster in a poor country or locality like Gikomba, while a fire hazard in a richer country or locality may have little impact. At local level, a hazard can cause disaster for poor households; while richer households may not be affected to the same extent. The crunch model is based on the perception that a number of factors influence vulnerability to disaster as seen below.



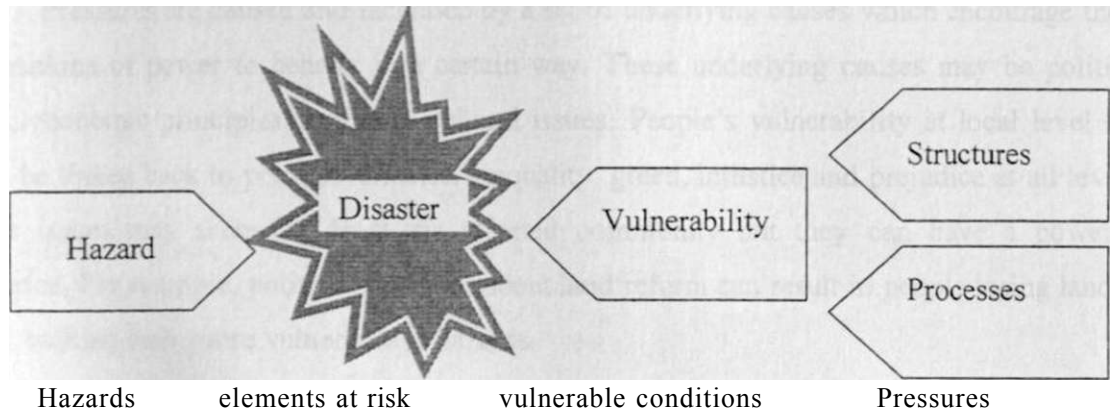
2.4.2.4 Elements at risk

People's lives depend on a number of different elements. These elements include houses, water supplies, social groups and networks, crops, livestock, savings, jobs, businesses and the natural environment. If these elements are vulnerable, the hazard is more likely to cause damage to what is referred to as elements at risk.

2.4.2.5 Vulnerable conditions

Some elements are at risk because they are unable to withstand the impact of a hazard. This vulnerability might be economic, such as fragile livelihoods, natural such as dependence on very few natural resources, constructed such as structural design; location of houses on an unstable slope, individual such as lack of skills or knowledge; lacking opportunity due to gender, age or otherwise and social elements such as a disorganized or fragmented society and bad governance.

The diagram can then be expanded to show that a number of pressures increase to vulnerability.

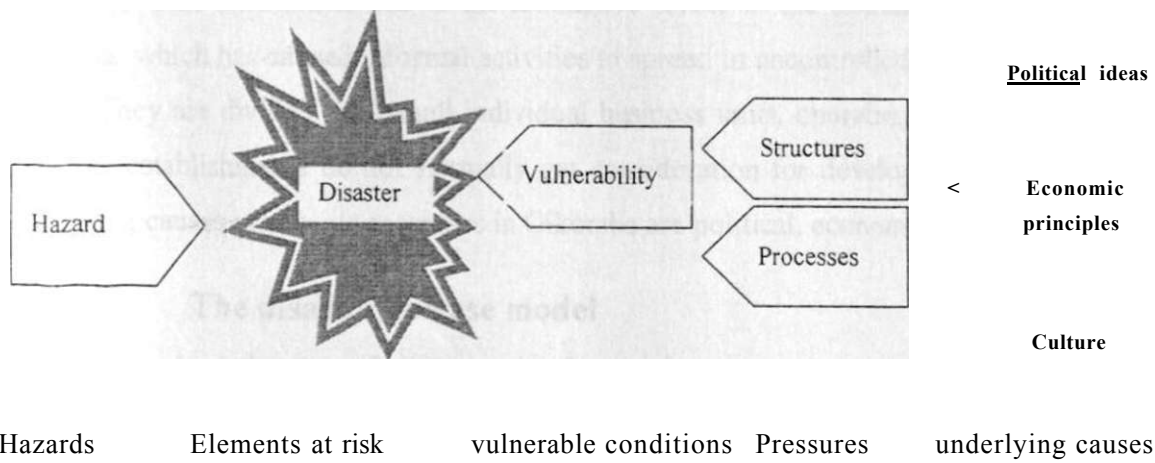


2.4.2.6 Pressures

Vulnerable conditions exist because of pressures acting on individuals and communities. We might not be aware of these pressures and they are often difficult to challenge. Pressures are structures and processes that create vulnerable conditions. It is therefore important to identify the architects of these vulnerable conditions and how structures affect the vulnerable conditions (processes), such as through policies and practices. Those responsible for creating these vulnerable conditions can be organizations.

A number of underlying causes influence the pressures.

Figure 2 the disaster crunch model



2.4.2.7 Underlying causes

Pressures are caused and increased by a set of underlying causes which encourage those in positions of power to behave in a certain way. These underlying causes may be political ideas, economic principles or due to cultural issues. People's vulnerability at local level can often be linked back to poor governance, inequality, greed, injustice and prejudice at all levels. These issues may seem far from the affected community but they can have a powerful influence. For example, political decisions about land reform can result in people losing land or work, making them more vulnerable to hazards.

The disaster crunch model aids in understanding the cause and effect process that lead to fire disasters in Gikomba. In the case of Gikomba, the model shows that fire in Gikomba remains just that—a fire, unless it encounters a hazard. Gikomba is a highly populated area and fire hazard is real. It can be categorized as an area that scores low in infrastructural planning and design. Social amenities in Gikomba are hardly adequate while businesses are conducted in a haphazard manner. So is Gikomba community vulnerable? The answer to the affirmative.

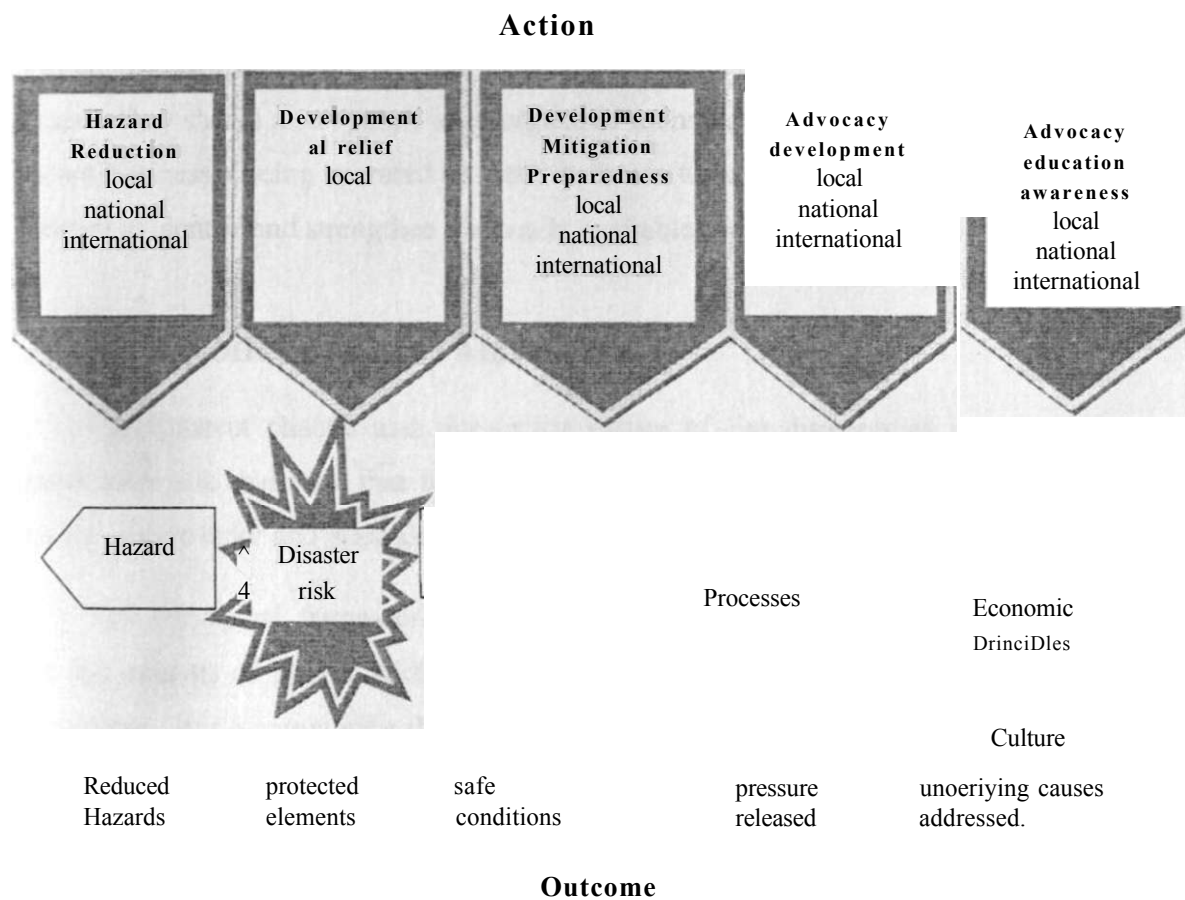
Majority of the people in Gikomba are poor, a very strong ingredient to vulnerability. They are unable to adequately anticipate, withstand and recover from hazards. This is because, the element at risk in Gikomba is mainly their businesses, residential houses, and social amenities whose use and functionality is affected by frequent fire hazards. They also operate in vulnerable economic conditions and fragile livelihoods with some lacking fire disaster management skills and knowledge. The community is also fragmented and disorganized in the way they conduct their businesses due to structures and processes that create these vulnerable conditions. This situation is due to the retroactive forces to the formal sector development at Gikomba, which has caused informal activities to spread in uncontrolled manner and temporary nature. They are divided into small individual business units, operating on quartered land and therefore establishments do not normally get consideration for development promotion. The underlying causes increasing pressures in Gikomba are political, economic and social in nature.

2.4.3 The disaster release model

To reduce the risk of disaster, the factors that cause risk should be addressed. This means working against all the components of the crunch model. Action may be necessary at local, national and even international levels. Ways could be found to reduce the occurrence, frequency or strength of various hazards. For example, communities can be mobilized and trained in fire disaster prevention, mitigation and response. Vulnerable groups should be

encouraged to take part in decision-making to ensure that conditions do not worsen for the poorest and most vulnerable people.

Figure 3 the disaster release model



All vulnerable people have capacities that can be used to lessen the impact of a disaster. If a disaster happens, not only should immediate needs be met but capacities should be recognized and strengthened. Before a disaster happens, disaster risk can be reduced by discovering and supporting capacities. Some structures and processes may help to reduce the risk of disaster because their political and economic approaches and values are fair and just. To encourage these values among negative pressures, we can use advocacy. All of these approaches should be based upon a detailed assessment of the disaster risk experienced at a local level. People become less vulnerable when they work together to identify and prioritize risks and devise a programme of activity to reduce those risks.

The disaster release model looks at how disasters can be avoided or minimized. To reduce the risk of disaster, the factors that cause risk in Gikomba should be addressed by all stakeholders and duty bearers at local and national level. At the local level, efforts to decongest the market, improvement of infrastructural planning and design and social amenities is key. Training on disaster management in general is also important as the community shall be resilient; meaning they will be able to adequately anticipate, withstand and recover from hazards. They should also operate in an organized manner, where roads and pathways are clear with not businesses being operated on water hydrants to pave way for fire response. It is also important to identify and strengthen the locally available capacities and utilize them fully.

2.5 Conceptual framework

The apparent chaotic and threatening nature of fire disasters as uncontrollable and unpredictable is a challenge that forces Gikomba community to come up with organizational means to restore order and normalcy.

This conceptual framework embraces the fact that indeed, Gikomba community does exist and consists of people with same goals, culture, interest and challenges in their local environment. It is a community that can be mobilized and organized to be resilient not only to fire disasters but other disasters too. It is also a fact there is strength in numbers and that group and community strength accumulates when individuals cooperate as one of the most effective means of coping and surviving. This idea is shared by Namboodripad (2008:29) who argues that ""historical forms of organizations dealing with disaster events reflect how well we have adapted to the sources of disasters as well as how we utilize social capital in minimizing disruption."

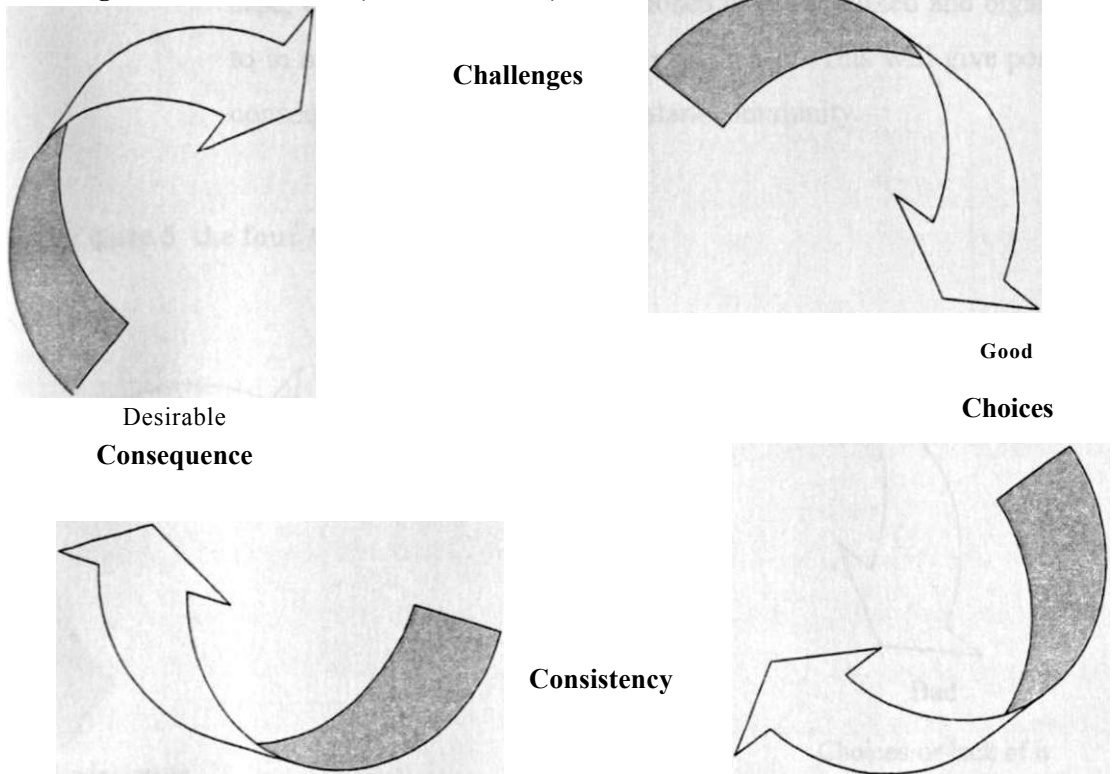
To achieve fire disaster resilience, communities should be organized in a manner that conforms to the arrangement proposed by disaster pressure and release models as well as structural-functional theory as seen in the lens of Talcott Parson and Hubert Spencer. But on the other hand, communities especially in urban setup are dynamic in nature. The systems and structures that are there today may be obsolete or nonexistent in the coming decades causing dysfunction and disequilibrium in the society such that adaptation, goal attainment, integration and pattern maintenance proves unachievable. Indeed, when some organs of the body do not function properly, the entire body is affected and therefore survival is threatened. Vulnerability

can rise to levels that will make it difficult to reduce hazards, protect elements, provide safe conditions and ultimately make it difficult to release pressure by addressing the underlying causes that cause fire disasters. The understanding by Gikomba community that this is a temporary, informal and haphazard undertaking cause them not be mobilized and organized enough to be fire disaster resilient as well as make good choices when faced with challenges.

The four Cs Concept

The conceptual framework can be summarized by the following four Cs concepts.

Figure 4 the four Cs (ideal situation)



C - Challenge Gikomba community is challenged by economic, natural, constructed, individual and social vulnerability which is worsened by a dysfunctional fire disaster management system.

C - Choices When faced with the challenge above, Gikomba community should come up with desirable deliberate choices of mobilizing all types of resources within and without them to make them a fire disaster resilient community in an organized way.

C - Consistency There are no good choices for keeps. One good choice requires more good choices to maintain and strengthen the original good choice. The community in Gikomba, being an urban community is dynamic in nature and great effort need to be done to ensure that the values of a fire disaster resilient community are well maintained and passed on from one generation to the other with the necessary changes to ensure that the good decisions that are made are not rendered obsolete by inconsistent ones.

C - Consequences Every choice taken has both desirable and undesirable results. In this case, Gikomba community has chosen to be mobilized and organized to in order to achieve fire disaster resilience. This will give positive consequence providing a fire resistant community.

Figure 5 the four Cs (undesirable situation)

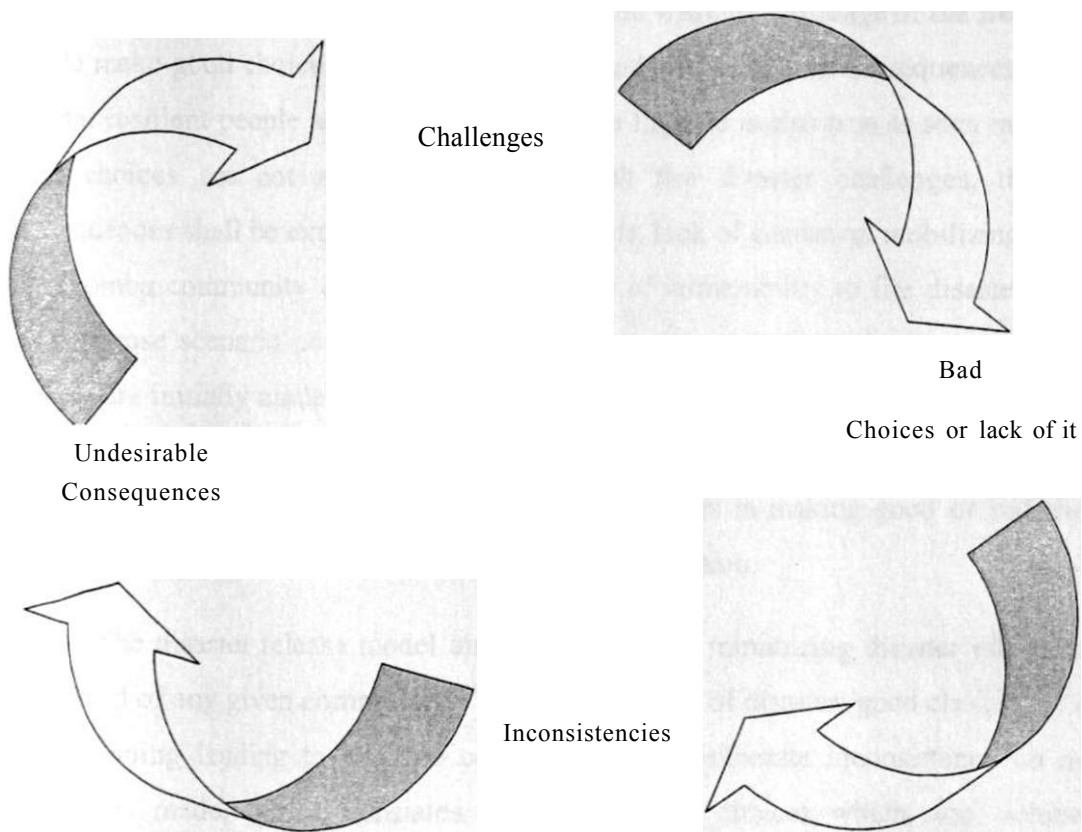
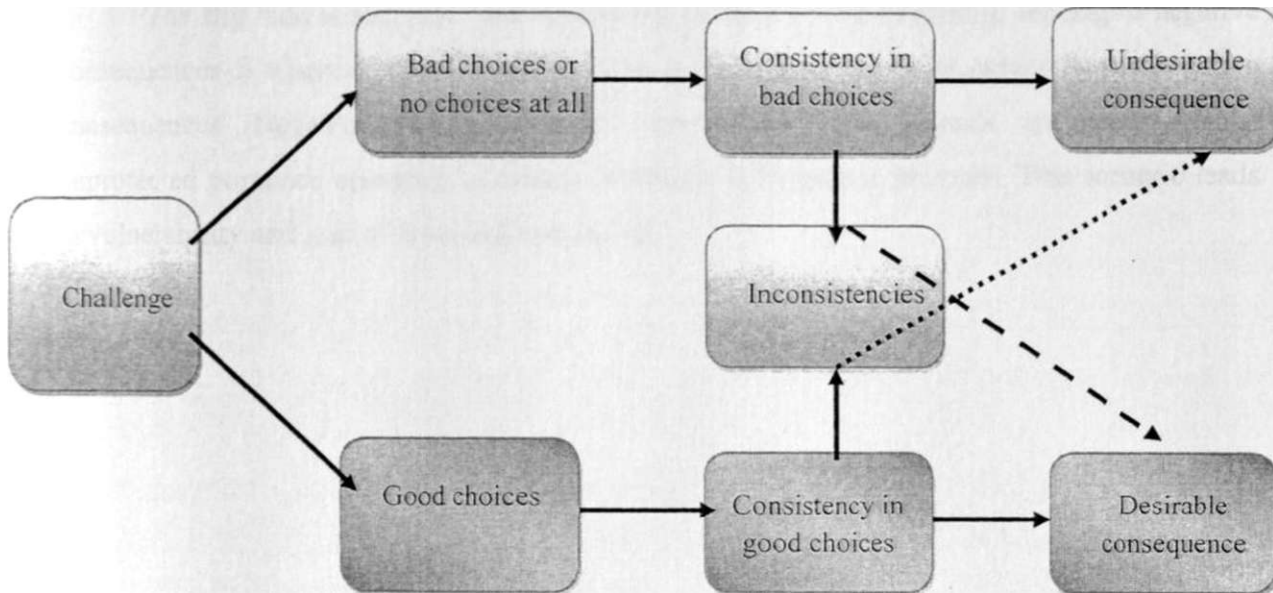


Figure 6 the four Cs concept summary



Ideally, when Gikomba community is faced with the challenge of the frequent fires, they should make good choices that will eventually end with desirable consequences - making them disaster resilient people as seen in figure 2. The flipside is also true as seen in figure 3. When good choices are not made when faced with fire disaster challenges, then undesirable consequences shall be experienced. In other words, lack of consistent mobilizing and organizing of Gikomba community causes increased levels of vulnerability to fire disasters. In summary, the best case scenario occurs when, good choices are made from the beginning or where bad choices are initially made then good choices follow. The worst case scenario occurs when good choices are initially made then bad choices follow or where bad or no choices are made as figure 4 demonstrates. Said differently, inconsistencies in making good or bad choices bring about a paradigm shift to either the right or wrong direction.

The disaster release model aims at avoiding or minimizing disaster effects to lives and livelihood of any given community. To reduce the risk of disaster, good choices are made from the beginning leading to positive consequences or deliberate inconsistency on making bad choices is made, which translates to making good choices which, too, achieve positive consequences. When hazards in Gikomba are reduced, the elements at risk protected, safe

conditions enhanced, pressure released and underlying addressed assures that Gikomba achieves a disaster resilient status.

The flip side is also true, bad choices are made from the beginning leading to negative consequences or where there are inconsistencies in making good choices, which lead to negative consequences. Negative consequences are experienced when hazards are many against unprotected populace operating in unsafe conditions with intense pressure. This scenario leads to vulnerability and loss of lives and livelihoods.

CHAPTER THREE

Research Methodology

3.0 Introduction

"Any academic subject requires a methodology to reach its conclusion. It must have a way of producing and analyzing data so that theories can be tested, accepted or rejected. Without a systematic way of producing knowledge, the findings of a subject can be dismissed as guesswork, or even as common sense made to sound complicated" (Haralambos, Holbom and Heald, 2008:787). Research therefore calls for scholars to explore new frontiers of knowledge, requiring them to apply standard research methodology. Methodology is organized observation (Awuondo, 1994:1) and a procedure that guides research (Calhoun, Light and Keller, 1995:29), which helps the researcher state well in advance what is to be observed and how the process of observation will be done before embarking on the field work. Methodology is concerned with both the detailed research methods through which data are collected, and the more general philosophies upon which the collection and analysis of data is based.

This chapter was organized along the following sections: site selection and description, research design, sampling design, sources of data, methods and techniques and tools of data collection and methods of data analysis.

3.1 Site selection and description

The study was carried out in Gikomba Market in Nairobi. Gikomba is located in the South East end of Nairobi's Central Business District (CBD). The Southern boundaries are the Nairobi industrial area, to the East and the Northern zone lie in a number of middle and low-level-income residential estates of Nairobi. The Nairobi river course way forms a major physical feature (Mochache, 1985).

Gikomba is the largest informal market in Kenya, and the biggest used clothing exchange in the continent (Brighouse, 2010). Majority of the clothes and shoes sold at this market arrive second hand, generally beginning their journey from United Kingdom, United States of America and some European countries. These items are bought from charity shops by

textile reclamation industries, which sort, grade, fumigate, weigh and compress the clothes for shipment to African countries. Generally, prices in year 2011 range from Kenya Shillings 5000 to 55,000 per bale. Market traders working in Gikomba, sort through the items and grade them to their own personal standards. Gikomba attracts diverse cultures and nationalities and serves as a residential area too.

The frequent fires experienced in Gikomba market, their severity and their effects to lives and livelihoods necessitated this selection. Due to limited time and finances the study was restricted to the community of Gikomba market, targeting wholesalers and retailers for second hand clothes and shoes only.

3.2 Research Design

The study employed descriptive study design. Kothari (2009:37) states that "descriptive research studies are those studies which are concerned with describing the characteristic of a particular individual, or of a group..." a fact-finding investigation which aims at providing adequate interpretation of a phenomenon or phenomena. The choice of this research design was necessitated by the nature of the problem being studied. The role of Gikomba community organizing in achieving resilience to disasters was considered describable, data gathered easy to quantify and had the ability to be tested and retested. Care was taken to ensure that there was no distortion of data caused either by biased questions in the questionnaires or interviews as this were likely to happen (Walliman, 2006:116).

3.3 Sampling Design

3.3.1 Selection of respondents and key informants

The respondents for this study included Gikomba community wholesale and retail traders dealing with imported second hand clothes and shoes. Key informants are people with specialized professional background knowledge to issues being investigated. Three key informants included the Kenya Red Cross field officer, Chief fire officer from Nairobi Fire Service and the chairman of Gikomba market.

3.3.2 Sampling procedure

The study used both probability and non probability types of sampling. In sampling of the respondents, stratified random sampling and proportionate random sampling was employed in order to determine the sample size for each unit and to ensure that the sample is representative of the entire population. Purposive sampling technique was used for key informants. The researcher obtained the total units of the universe from Pumwani ward licensing officer of Nairobi City Council as per their zones. There were a total of 9 zones.

The researcher used stratified random sampling by sampling each stratum separately. First sampling from wholesalers and retailers proportionately was done. After which a proportionate sample of zones was drawn from each category of traders. Thereafter, a proportionate sample of male and female was determined from each category of traders from each zone. The sample used was 143 out of a total of 2,064 persons calculated at 6.93% as per table 1 below.

Purposive sampling technique was used to identifying key informants who the researcher considered to have played key roles in managing fire disasters in Gikomba market before and therefore are relevant to the issue of community resilience to fire disasters in Gikomba.

Table 1: sampling for Gikomba Market

Total units in the universe	2,064		
Desired sample size 6.93%	143		
Total wholesalers		622	43
Total Retailers		1,442	100
Total		2,064	143

Table 2: Wholesale strata calculation

			Total male	Male Sample	Total female	Female sample
Clothes	455	31				
Shoes	167	12				
Clothes			182	12	273	19
Shoes			67	5	100	7
Total	622	43 ¹	249	17	373	26

Since the gender aggregate in retail zones was not available from the Nairobi City Council (NCC), the researcher constructed it by observing the concentration of each gender per zone and assigned percentages for purposes of calculating gender stratum. Viatu area, Mbodeni and Kamukunji zones had 90% males while the rest of the zones had 60% female concentration as seen in table 3.

Table 3: Retail strata calculation

Zones	Totals	Total sample	Total men	Male sample	Total women	Female sample
ABC	80	6	32	1	48	5
E	32	2	13	1	19	1
F	140	10	56	4	84	6
G	120	8	48	2	72	6
H	80	6	32	4	48	2
J	60	4	24	2	36	2
Viatu area	600	42	540	39	60	3
Mbondeni	150	10	135	7	15	3
Kamukunji	180	12	162	11	18	3
Total		100	1,042	71	400	29

3.4 Sources of data

The study used both primary and secondary sources of data. Primary data are those that which are collected afresh and for the first time, and thus happen to be original in character. The methods for collecting primary data included interviews and questionnaires.

The researcher used secondary data and was careful to observe reliability, suitability and adequacy of the data collected while gathering published and unpublished material relevant for the study. These materials were be obtained from relevant government offices, from various publications from international bodies; books, magazines, newspapers and reports prepared by various scholars.

3.5 Techniques and tools of data collection

The choice of data collection techniques and tools was determined by the nature of the research. Interview technique was used to collect data where interviews were conducted. Prior to the interview, the respondents were briefed on the purpose of the study and assured of confidentiality of their responses to minimize biased responses. Inclusion of their identity, designation or otherwise was optional. Observation techniques were used. Both direct and indirect observation was used in an unstructured manner, where the researcher was not restricted on what to observe and therefore observed behavior in regard to community resilience to fire disasters in Gikomba market.

A standardized interview guide was used as a tool to collect data from key informers while a questionnaire was used to collect data from the respondents. The questionnaires contained both open and closed ended questions that enabled the researcher carry out an objective probe to the sampled population in Gikomba market. The former allowed the respondents to communicate freely while the latter offered a choice of answers that closely represented their views. The questionnaire enabled structured social interaction between the researcher and the respondents thereby providing an opportunity to obtain quantifiable and comparable information related to the study. The researcher used a note book and a camera to aid in the recall on what is observed.

3.6 Methods of data Analysis

Since data obtained from the field in its raw form is difficult to interpret, the data was sorted, coded, and analyzed. From the analysis, the researcher was able to make sense of the data. Descriptive statistics and conceptual matrix statistics were used to analyze both quantitative and qualitative data.

3.6.1 Descriptive statistics

Descriptive statistics was used to analyze quantitative data. Descriptive statistics involves the describing, exploring and summarizing of data to establish patterns in the data using summary measures that help to summarize the data and make it easier to understand. As Mugenda (2003:117) puts it "The purpose of descriptive statistics is to enable the researcher to meaningfully describe a distribution of scores or measurement using a few indices or statistics." The processing of quantitative data was done using SPSS and MSE. Findings were presented in

a descriptive form through summary measures such as frequency and percentage distribution tables, graphs and charts.

3.6.2 Conceptual clustered matrix

The qualitative data was analyzed in a systematic way in order to come up with useful conclusions and recommendations. Conceptually clustered matrix was used to summarize the mass of data by combining groups of questions that were conceptually connected either from a theoretical point of view, or as a result of groupings that were detected from the data. Here, data was read, understood and emergent themes, gaps or contradictory responses identified. Thereafter, data was coded according to the emerging themes. Interpretation of data was done bearing in mind credibility, dependability and transferability of the same information. The analyzed data was integrated with quantitative data.

CHAPTER FOUR

Data presentation, analysis and interpretation

4.0 Introduction

This chapter deals with data presentation, description, analysis and interpretation of the demographic characteristics of the respondents and the levels of awareness regarding fire disasters in Gikomba market. It also reveals the persons involved in fire disaster management and the role of other stakeholders in fire management. Besides, it also discusses the extent to which the Gikomba community has been mobilized and organized to prevent, mitigate, prepare and respond to fire disasters in the future. The challenges encountered during the research process have also been discussed. Explanations and discussions on the research findings are presented in terms of tables, graphs and charts indicating frequencies and percentages.

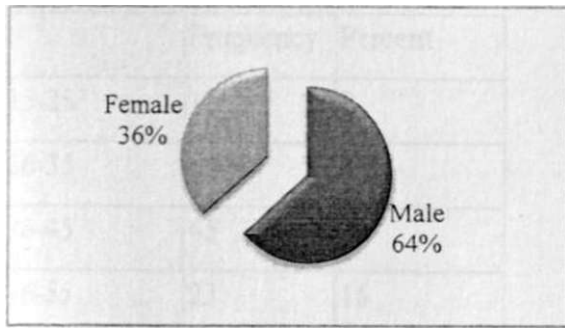
4.1 Demographic characteristics

Demographic characteristics of respondents focus on gender, age, education level, their nationality, business status and the years they have operated the business - thus reveals the basic characteristics of Gikomba market community.

4.1.1 Respondents'gender

A total of 143 respondents were interviewed of which 36% were females and 64% were males as illustrated in the pie chart 1 below the gender of the respondent. It was observed that most males specialized on trading on second hand shoe business as opposed to females who saturated the clothes business. This was the case for both wholesale and retail types of trade.

Chart 1 gender of the respondents.



4.1.2 Respondents' age distribution

Research findings indicated the people aged between 26-35 years formed majority of the respondents with 42%, followed by those aged 36-45 with 32%. Those respondents aged between 46-55 years of age brackets were 16% while those who are younger aged 15-25 were 8%. Those aged 56 years and above constituted 3% only. These findings show that cumulatively, 74% of the traders in Gikomba are at their most productive age group; that 'age bracket' 26-45. This observation can be explained by the fact that at this age, those who have been to school have cleared and ready to work. They also have the physical strength which may begin to dwindle as the approach the age of 50 years. Business in Gikomba is conducted in seemingly difficult environment, where business starts at five in the morning, when customers from outside Nairobi and its environs make way to purchase their goods. Since Gikomba market is a congested informal open air market, difficult conditions of the weather are bound to take a toll on traders who are aged 56 and above.

The traders' age distribution informs this research that majority are capacitated in achieving resilience to fire disasters in Gikomba because they not only have the physical strength but as shall be discussed later, they have intellectual capacity to understand issues to do with fire disasters. Majority of them are educated up to secondary level and they are at their most productive age.

Table 4: Age of the respondents.

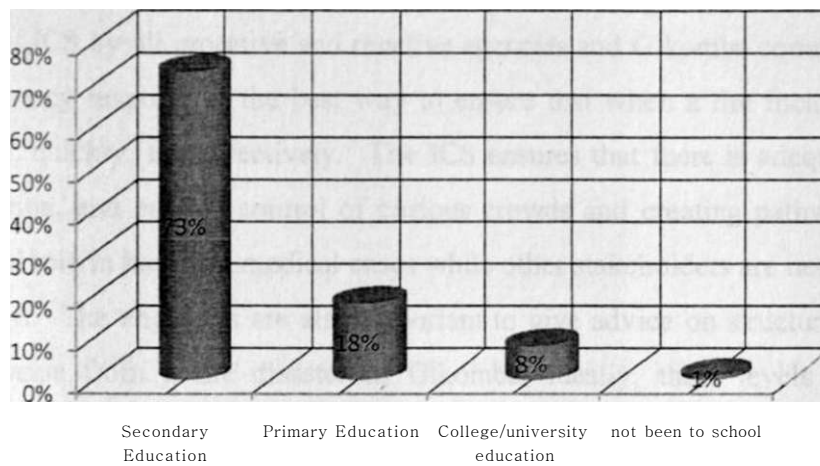
	Frequency	Percent
15-25	11	8
26-35	60	42
36-45	45	32
46-55	23	16
56 and above	4	3
Total	143	100

4.1.3 Respondents' Education.

Among the respondents, 73% had attained secondary education followed by 18% with primary education. Those who had college or university education were 8% while 1% of the respondents had not been to school as seen in graph 1 below which shows respondents' education level. The findings reveal that the community has the ability to absorb and recover from the effects of a hazard in a timely and effective manner because of their literacy level. The findings also inform that the community is able to come up with measures aimed at minimizing destructive and disruptive effects of the fire hazards thus lessening the magnitude of fire disaster in Gikomba - an observation that is quite positive.

However, it was observed that the market lacks basic guidelines on what to do in case of fire, clearly displayed in strategic positions for all to understand and adhere. This scenario indicates that their capacity in terms of their literacy levels is not being useful in terms of fire disaster management.

Graph 1 respondents' education level



4.1.4 Respondents' nationality

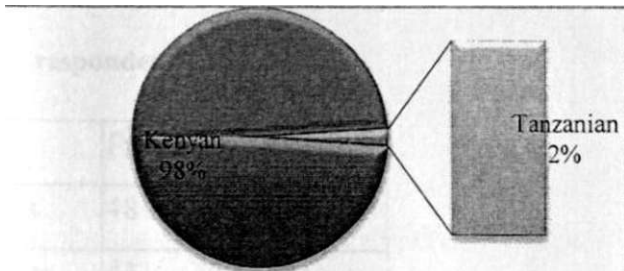
The study revealed that not all Gikomba traders are Kenyans but some Tanzanians too. Chart 2 below, respondents nationality revealed that 98% of the respondents were Kenyans while 2% were Tanzanians. Fire incidents in Gikomba occur at random and create different scenarios upon each occurrence. The world is a global village and markets are open for all and sundry. So, when fire disaster occurs, it has cross border effect. A fundamental question would therefore be; who is responsible for disaster management. The fact that Kenya Government has licensed Tanzanians to operate in Gikomba should translate to fundamental arrangement on coordinating disaster management between the two countries through Incident Command Systems (ICS).

According to US Federal Emergency Management Agency (FEMA 2011:1) The Incident Command System (ICS) "is a standardized, on-scene, all-hazards incident management approach that allows for the integration of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure." It enables a coordinated response among various proactive and reactive players and stakeholders. As a system, ICS is extremely useful; not only does it provide an organizational structure for incident management, but it also guides the process for planning, building, and adapting that structure. Using ICS for every incident or planned event helps polish and maintain skills needed for the large-scale incidents. ICS can be established to help eliminate ambiguity in command and control; improve

resource coordination and communications especially during response, which should cut across neighboring countries.

Use of ICS by all proactive and reactive agencies and Gikomba community traders involved in emergency response is the best way to ensure that when a fire incident occurs, it is resolved safely, quickly, and effectively. The ICS ensures that there is adequate space for emergency operation, and enough control of curious crowds and creating pathways. The medics play a pivotal role in handling medical cases while other stakeholders are needed to offer psychosocial support. The engineers are also important to give advice on structural secondary hazards that may arise from a fire disaster in Gikomba. Ideally, these levels of cooperation calls for development of strong working relationships and partnering with other cross border incident responders before fire disaster occurs.

Chat 2: respondents' nationality.



4.1.5 Respondents' position in business

The findings indicated that 83% of the respondents were owners of the business while 13% were employed as table 5 demonstrates. It was observed that the employee respondents had their employers within reach, a scenario which could be explained by the fact that the business in Gikomba involves a lot of cash transactions which is easily managed by owners. What these findings reveal is that the owners have an upper hand when it comes to making informed decisions on fire disaster prevention, mitigation and response. They have the ability to understand their high levels of vulnerability and therefore collectively engage in risk management. They are capable of committing resources towards risk identification, risk reduction and risk transfer for insurance and financial protection.

Table 5: respondents' position in business

	Frequency	Percent
Owner	119	83
'Employee	18	13
No response	6	4
Total	143	100

4.1.6 Respondents' years in business

As seen in table 6, the findings indicated that 34% of the traders have been in business for the last 1-5 years followed by those who have operated between their businesses for 6-10 years at 30%; 11-15years at 20% and 13% for those who have operated their businesses for 16-20 years. This observation shows that there are many new entrants in Gikomba business of second hand clothes and shoes who exit as years progress. This observation is however not unique to this type of trade but is common with SMEs.

Table 6: respondent's business age

	Frequency	Percent
1-5 years	48	j j
6-10 years	43	30
11-15 years	28	20
16-20 years	18	13
other	6	4
Total	143	100

4.1.7 Cross tabulation of years of operation and position in business

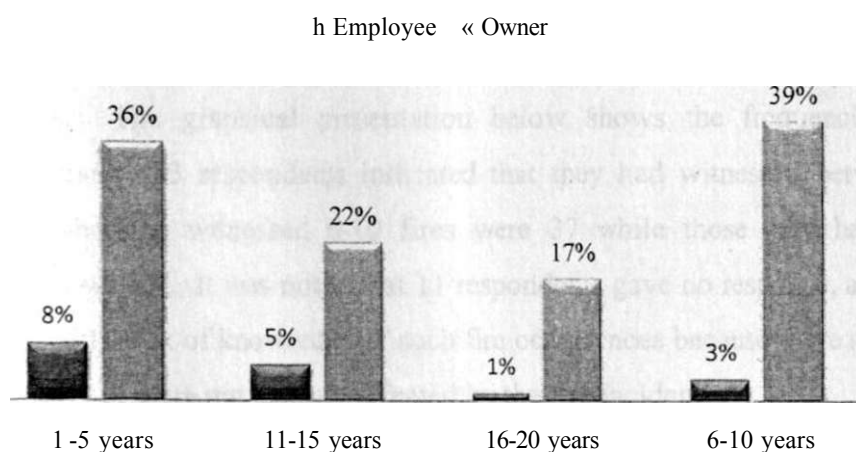
The years of operation and position in business categories were cross tabulated. Trends were observed where those who had been in business for 6-10 years were leading in business ownership followed by those who have operated their businesses for 1-5 years and 11-15 years respectively as shown in graph 2 below. On the flipside the employees were highest recorded at the category of 1-5 years at 8%, 5% for those who had operated the business for 11-15 years,

3% for those who had been in Gikomba for 6-10 years and 1% for those with 16-20 years in business. While there are new entrants in business as employees, their status probably changes from "employee to owner" as they continue to gain experience.

These findings inform that the traders have lower perception of risk because as they progress with the business, they focus on the investment and not on the fire hazard prevention. The respondent perceived risk as an act of God thus resigning to fate. Some however felt that it is as a result of the interaction between human congestion overstressing the market as a natural environment. Some denied the existence of risk. Varying levels of their socio-economic status was observed. There are those who operated multi-million businesses as opposed to others who operated with minimum amount to purchase just one bale of goods. The socio-economic status of the traders therefore can be said to have influenced their risk perception, their geographical location and their experience with past hazards and that the causes of those fire hazards had not been addressed.

Overall, the pull towards investment by owning the business was observed. However It was regrettable that the pull factors was not commensurate with disaster resilience as majority of the traders focused on the short term gains instead of the long term ones.

Graph 2: respondents' years of operation and position in business.



4.2 Level of awareness regarding fire disasters

4.2.1 Fire incidences in the last 12 years

Table 7 below shows that 59% and 26% indicated that there had been 1-5 and 6-10 fire incidents in the last 12 years respectively, a clear indication that disaster preparedness is low. The Chairman of Gikomba security team indicated that there has been 3 major and 6 medium fires during the same period.

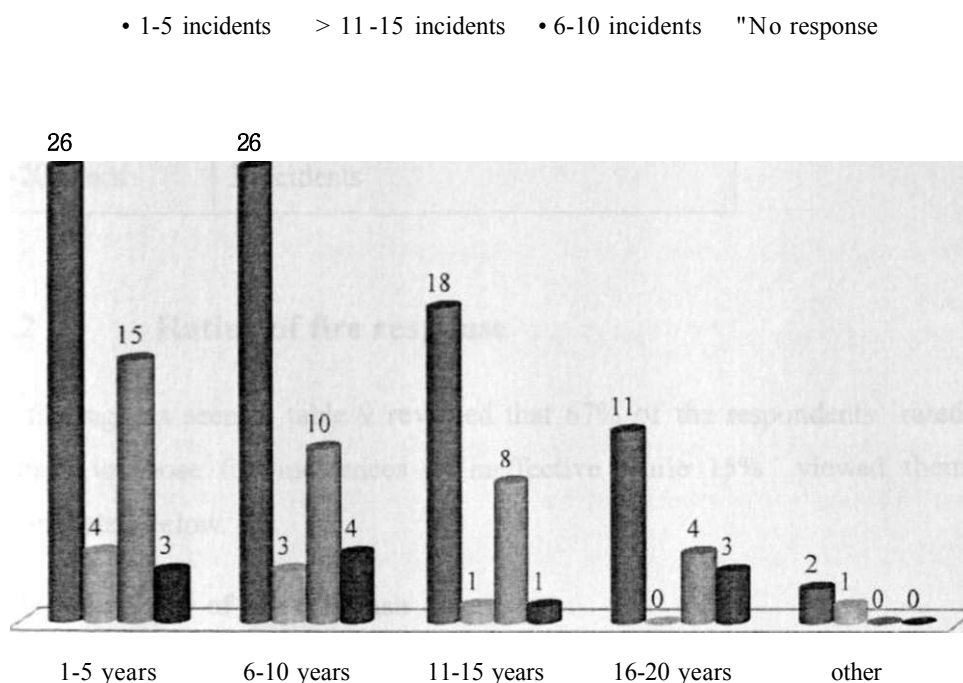
Table 7: fire incidents experienced by respondents.

	Frequency	Percent
1-5 incidents	85	59
11-15 incidents	10	7
6-10 incidents	37	26
No response	11	8
Total	143	100

It was interesting to cross-tabulate the fire incidences in the last 12 years and the years in business. The graphical presentation below shows the frequencies of the respondents. Cumulatively, 83 respondents indicated that they had witnessed between 1-5 fire incidents. Those who had witnessed 6-10 fires were 37 while those who had witnessed 11-15 fire incidents were 9. It was noted that 11 respondents gave no response, an occurrence that can be attributed to lack of knowledge of such fire occurrences because there are either new entrants in the market or were not directly affected by the fire incidents.

What these findings informed the research is that the level of awareness of fire disasters in Gikomba market is high due to past experiences of major fires that have destroyed lives and livelihoods. During the research process, at least several low scale fire incidences were reported and extinguished successfully.

Graph 3: cross tabulation of fire incidents and years in business



The average fire incidents experienced annually were further calculated as indicated in table 8 below. For the last 5 years, averages of 9 fire incidents were reported annually. Those who had been in the business for the last 6-10 years reported averages of 8 fire occurrences per year while those who had worked for 11-15 years reported an averages of 5 fire occurrences while the mean of those fire incidences in the last 16-20 were 3 annually. It shows that those who have been in business longer have experienced fewer fires incidents than those who have been in the business for a short period. Normally, the reverse should be true. The picture that is painted above by the findings indicates that Gikomba community is highly vulnerable to fire disasters, whose frequency appears to be increasing by day. The occurrence can be attributed to rural-urban migration, the high rate of unemployment which has resulted in weak socio economic status of majority of the educated youths.

Table 8: Average fire incidents experienced annually

Years in business	Average (mean) annual fire incidences
1-5 years	9 incidents
6-10 years	8 incidents
11-15 years	5 incidents
16-20 years	3 incidents

4.2.2 Rating of fire response

The findings as seen in table 9 revealed that 67% of the respondents rated the fire disaster response in those fire incidences as ineffective while 15% viewed them as effective as demonstrated below.

Table 9: Efficacy of fire response

	Frequency	Percent
Effective	22	15
Not effective	96	67
No response	19	13
Very effective	6	4
Total	143	100

4.2.3 Perception on the likelihood of fire disasters

The respondents were asked to rate the probability that fire would break in the market, 59% and 26% indicated that the probability is high and medium respectively giving a total of 85% as per table 11 below. However, 7% perceived that the probability fire disaster in Gikomba to be low.

Table 10: probability of fire outbreak in Gikomba market

	Frequency	Percent
High	84	59
Low	10	7
Medium	37	26
No Response	12	8
Total	143	100

The traders view and perception of risk varied. There are those who were completely ignorant of their vulnerability to fire disasters and the risks involved. A case in point is where a food kiosk was erected under a wooden structure above where other businesses were being conducted. There are those who were aware of the risks involved but did not take any action. Overall, the high percentage of the respondents indicated that the likelihood of fire occurrence is high, a scenario that was justified by historical occurrences whose causes had not been addressed. It was observed that the effects of the historical fires were still very fresh as some recalled the negative psychological effects that some of the traders suffered some of which were fatal.

4.2.4 Causes of fire

As the table 12 below reveals, 81% of the respondents indicated that faulty electricity (due to illegal connections thereby causing electric overloads), hot charcoal originating from iron boxes and charcoal stoves used by food kiosk owners are the main causes of the fire in the Gikomba. The smokers butts dropped in a not too careful manner were sighted as one of the causes of fires. Acts of arson were also noted as causes of fire disasters due to lack of ownership and security. Respondents intimated that arsonists ensure that fire spreads by blocking access roads thereby hampering response efforts. The respondents pointed out corruption as a contributing factor since when traders file their cases in court, the grabbers find their way out. The congestion in the market, the materials used for constructing the sheds and stalls are made of flammable materials. It was observed that uncollected solid waste also contributed to fire disasters. The market is not planned; thus businesses are conducted in a haphazard manner where food kiosks and ironing are done at any point of the market. The

paradox is that trade in second hand shoes and clothes are a multi-billion business mainly involving cash transactions of large sums of money. Planning the market would therefore be a major boost to the economy.

Table 11: The main causes of fire

	Frequency	Percent
Faulty electricity, Hot charcoal, food kiosks, smokers butts, arson	116	81
None	11	8
Others	16	11
Total	143	100

The pictorial evidence below backed by the response of the respondents indicated that majority Gikomba traders were aware of high vulnerability to fire disasters. Unfortunately that is where it ended, at knowledge level.

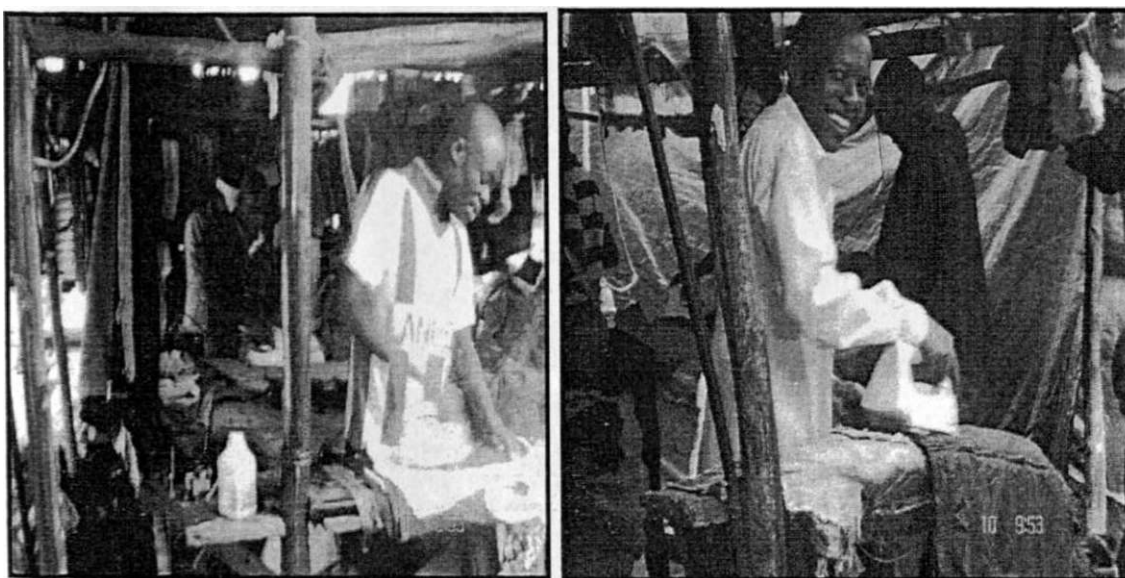


Image 1: young men busy ironing using electric iron boxes

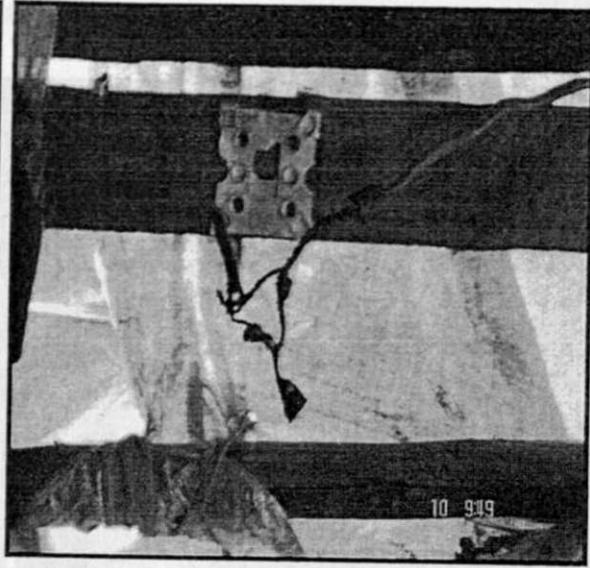
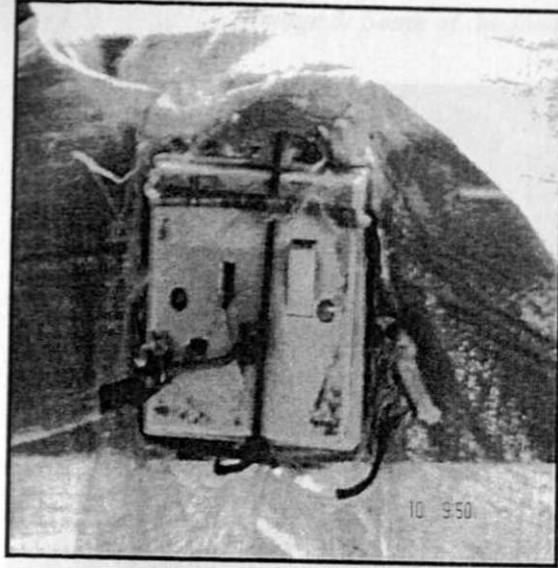


Image 2: illegal connection of electricity being used by electric ironers

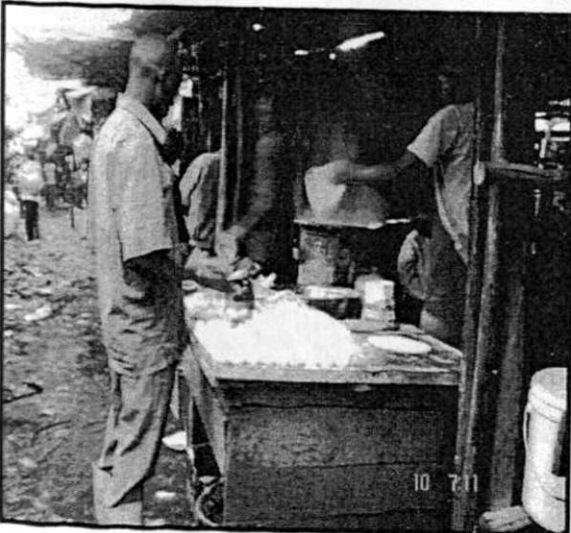
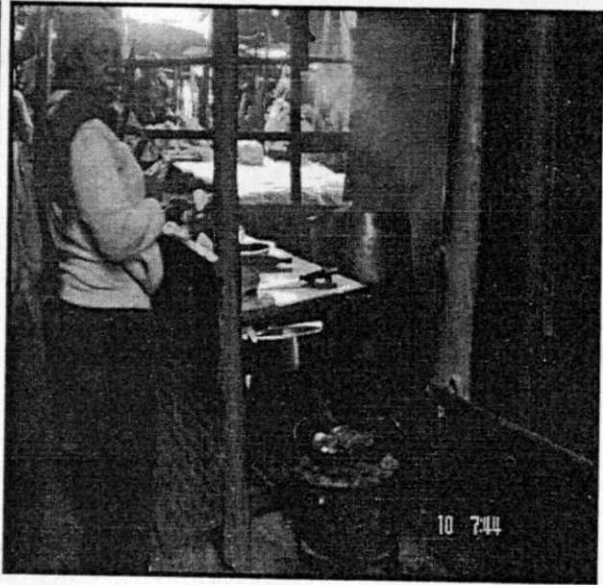


Image 3: Some of the food kiosks taken at different locations

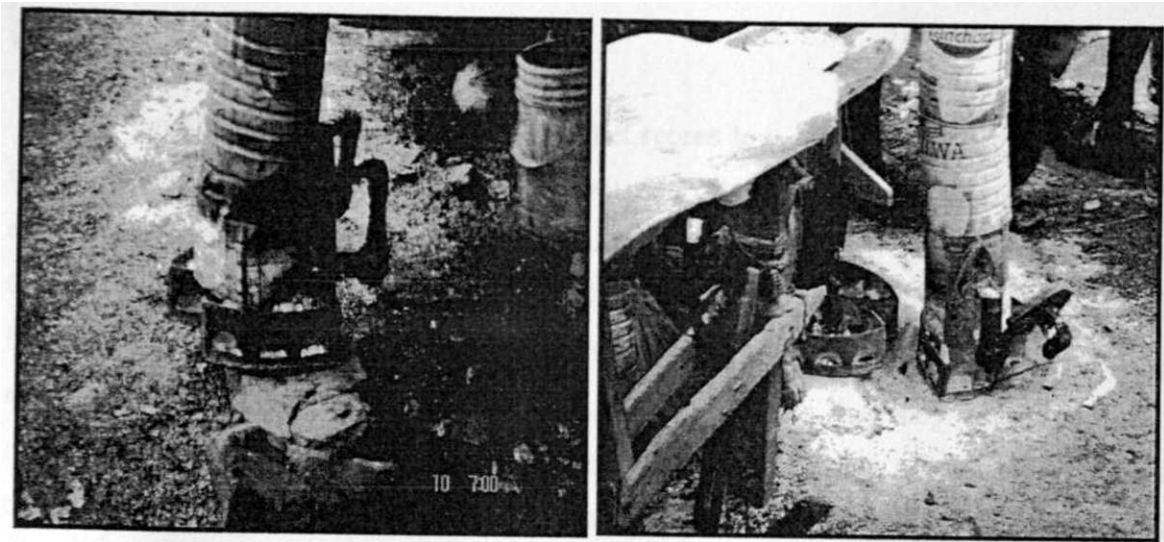


Image 4: charcoal iron boxes in use

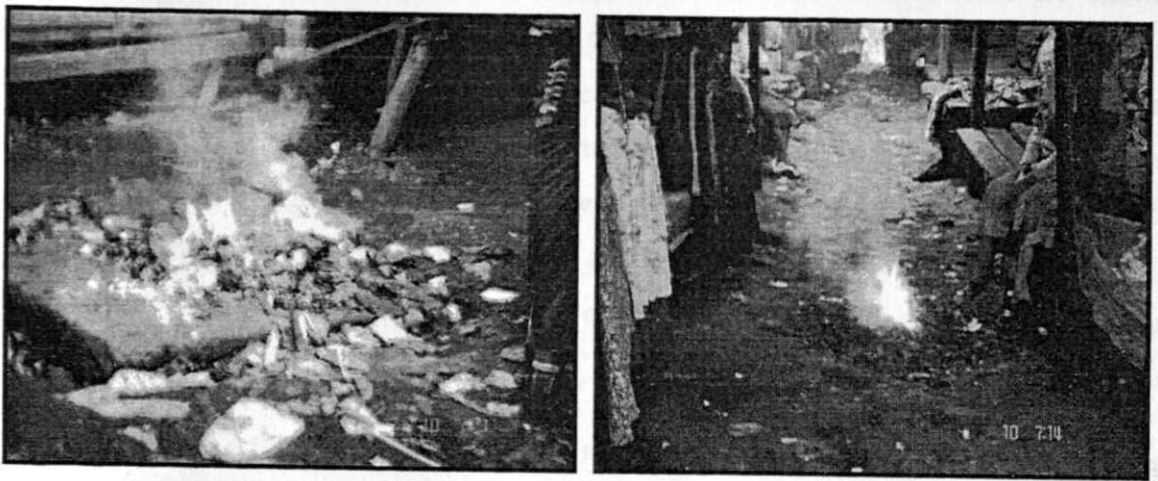


Image 5: litter burning by traders



Image 6: uncollected garbage

4.2.5 Fire prevention/detection and response

4.2.5.1 Prevention/detection.

Prevention of fire disasters in the market scores low. This can be attributed to the fact that the market is congested due to high population of traders, customers and residents. The core of the problem is that the market remains an informal market which lacks Nairobi City Council planning that has been enjoyed by other markets. Due to its unplanned nature, businesses are erected and conducted in a haphazard manner. For example, food kiosks are distributed throughout the market. The respondents indicated that they lacked capacity and mandate to restrain those doing the cooking because they are doing it for a living. The same can also be said for people who conduct ironing using either charcoal or electric iron boxes. Those using charcoal occasionally fail to extinguish them fully and that has been reported as having ignited the fires. Those using electric iron boxes for their business are known to connected electricity illegally thereby causing an electric overload. Ironing clothes in Gikomba market is big business because baling clothes from source makes them completely creased thereby concealing their beauty. The management of solid waste in Gikomba is wanting as its rate of generation is high and NCC may not be in a position to clear it as fast. The market does not have a smoking zone either. Flammable solid waste, congestion of structures which are made of polythene papers, cartons and timber coupled with flammable goods makes prevention of fire in Gikomba an uphill task.

As table 12 shows below, 86% of the respondents did not know of any fire fighting or detection devices in the market while 3% said they knew. One respondent indicated that there is a smoke detection device erected by a bank at the heart of the market - a fact that was affirmed by the researcher. The bank had established service provider to regularly service the device. Fire fighting aids included the nearby water Nairobi river, some few running taps, some fire extinguishers, twigs and soil. It is true that Nairobi river enjoys its course way along the market and its water has been used to extinguish previous fires, but its water was not always sufficient throughout the year not to mention that the river is highly polluted. The few running taps were either not having sufficient water or if they did, the pressure was low. The twigs and soil from the market could not be said to be reliable. The worrying trend in Gikomba is that most of the historical fire disasters happened at night, when traders were not in the market, so they could not use the fire fighting aids mentioned above.

Table 12: fire fighting and detection equipment present in the market

	Frequency	Percent
No	121	86
Yes	9	4
No response	13	10
Total	143	100

Further, 92% respondents did not have any emergency telephone numbers. However, 7% of the respondents who affirmed of having emergency telephone numbers indicated that they could contact the Kenya police using numbers 112 and 999 respectively. Other numbers were indicated as 020 222 2181 for Nairobi fire service and ambulance. The numbers above were valid and in use according to the Kenya Fire Safety Manual (KFSSM (2011:13)). It is needful for Gikomba traders to know other numbers especially for National Disaster Operations Centre (NDOC) 020 2211445 and Ministry' of state for special programmes whose toll free line is 0800 2212442 (MoSP). However as pointed earlier, Gikomba community traders have over 100 security men who have the mandate of ensuring security in the market. The traders pay a monthly fee. Since the security leadership has emergency numbers, there is need to share the same with the community.

Table 13 respondents with or without emergency telephone numbers.

	Frequency	Percent
No	132	93
Yes	11	7
Total	143	100

4.2.5.2 Fire response

The response to fire disasters in Gikomba market was poor as proved by frequent fires that had devastated the market before. The market was congested and the NCC had illegally allocated roads space for people to sell their wares and charge revenue from them. There was slow response from NFS whose mandate was to respond to fires in the city and its environs.

The slow response had been occasioned by poor penetration into the market. So when the experts did not respond in time, the traders took up the task of responding to fire disasters, not without challenges for they had inadequate technical know-how or expertise in dealing with fire incidents. Fire fighting aids were also scarce as stalls or buildings are erected on water hydrants. Those hydrants were not in good working conditions and even when they were, the chances of having water in the right pressure at the right time was not guaranteed because they were not regularly inspected for functionality.

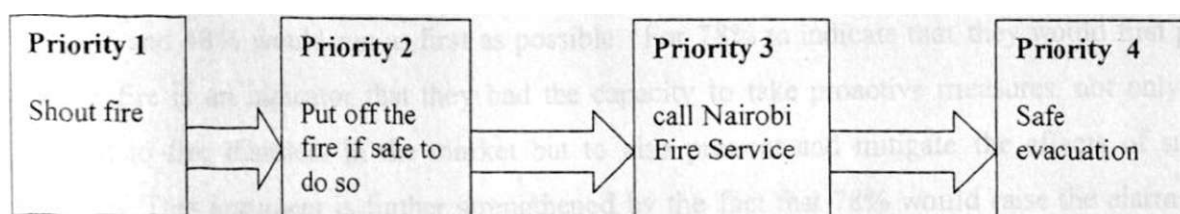
There was also lack of adherence fire safety measures set by NCC bylaws, which stipulates that it is an offence to use premises without obtaining a fire prevention clearance certificate from the Chief fire officer. It is also an offence to obscure, deface or remove a plate fixed on any fire hydrant. Corruption had a major role to play for non adherence to the NCC bylaws although lack of awareness of these by laws was observed.

There was lack of simple equipments like fire extinguishing aids like fire extinguishers and adequate water in most of their establishments. For some reason, some traders were ignorant of the dangers and loss which can be caused by fire which is also coupled with lack of knowledge and training of fire fighting techniques.

4.2.5.3 Actions to take in case of fire occurrence

Ideally, when a fire occurrence takes place, people are supposed to announce the hazard, respond to the fire hazard if it is safe to do so, go for the fire response service and finally leave the hazardous zone. The basic guidelines on actions to take in case of a fire disasters as obtained from NFS include sounding an alarm (electronic or shout "fire"), fight the fire if it is safe to do so, call the NFS giving the fire correct physical address, evacuate using escape route as illustrated in the diagram 7 below.

Figure 7: order of action to take in case of fire occurrence



The researcher probed what action(s) the respondents would take in case the fire broke out in the market in the correct order. The choices included i) run as fast as possible, ii) rescue property, iii) shout for help, iv) put out the fire with whatever is available and v) call the fire brigade.

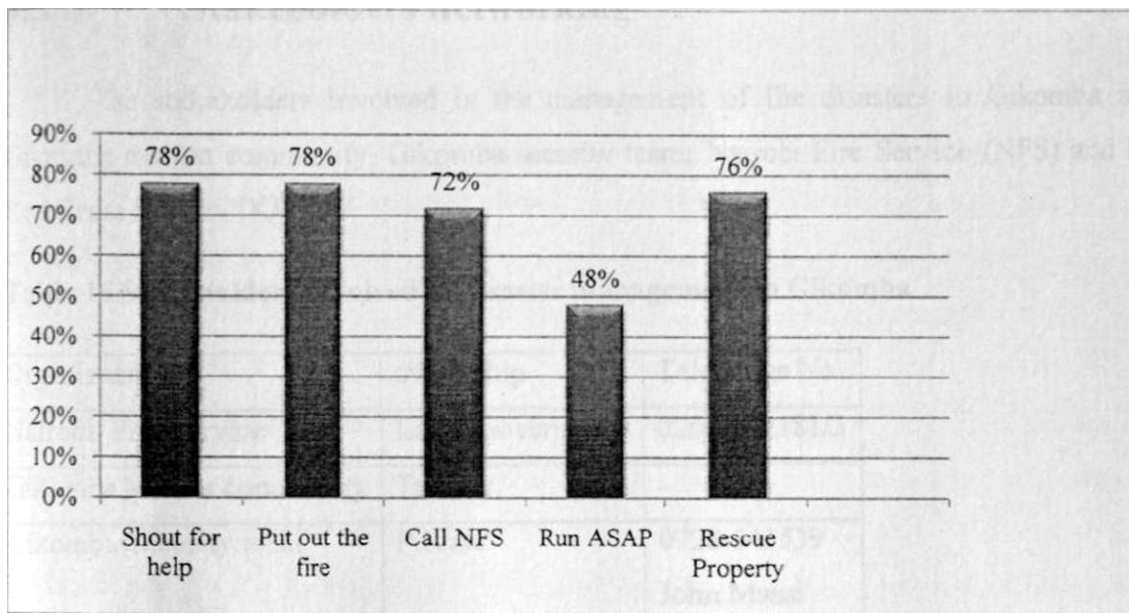
Table 14: priority actions respondents would take in case of fire occurrence

Action	Percent
correct order of action	0
Action 1-3	1
Other actions including "no action"	99
Total	100

The findings indicated that 100% of the respondents would not follow the correct order of actions while 99% would take other actions whose order was varied as table 14 shows. Only 1% respondents indicated that they would follow the order upto priority 3 but would not consider safe evacuation as an option This observation is further strengthened by the fact that 76% would rescue property as opposed to seeking personal safety; an action which scored least at 48%. This observation brings to the fore the fact that personal safety takes a secondary position to most of the respondents when it comes to fire hazards. Some respondent verbalized that safe evacuation would either be perceived as cowardice. There is also high possibility that Gikomba market community are not aware of the ideal order of actions to take in case of a fire occurrence.

Even though respondents were unaware of the correct order of actions to take, the findings (see graph 5 below) indicated that 78% respondents would first put out the fire with whatever is available, 78% would shout for help while 72% indicated that they would contact the NFS and 48% would run as first as possible. For 78% to indicate that they would first put out the fire is an indicator that they had the capacity to take proactive measures, not only to respond to fire disasters in the market but to also prevent and mitigate the effects of such disasters. This argument is further strengthened by the fact that 78% would raise the alarm by shouting for help for reinforcement. This scenario also points out that "fire safety begins with me' a theme adopted by KFFF, and by extension, Gikomba community must take responsibility.

Graph 4: respondents' actions in case of fire incidents



4.2.5.4 The mitigation measures in place

As table 15 below reveals, 89% of the respondents had not insured their businesses and even the 7% who had insured, none had been insured by reputable insurance firms. Names of little known insurance companies like Royal insurance company, Aneste holdings, INVESCO and Opportunity Kenya Limited featured. The highest insurance premium paid was Kenya Shillings 10,000. What this means is that chances of compensation could be very low. While the respondents depicted levels of ignorance of risk mitigation measures such as insurance, few insurance firms were also willing to engage in such risky business of insuring informal businesses conducted in informal settlements. However, it was observed that different insurance firms had deployed their agents to sell other insurance packages.

Table 15 how many businesses are insured

	Frequency	Percent
No	127	89
Yes	10	7
No Response	6	4
Total	143	100

4.3 Stakeholders networking

The stakeholders involved in the management of fire disasters in Gikomba include Gikomba market community, Gikomba security team, Nairobi Fire Service (NFS) and Kenya Red Cross Society (KRCS).

Table 16 Stakeholders involved in disaster management in Gikomba

Organization	ownership	Telephone No
Nairobi Fire Service	Local Government	020 2222181/3
Gikomba Market community	Traders	.
Gikomba security team	Private	0728 543539 John Masai
Kenya Red Cross Society	INGO	020 3950395 0728 602502
G4S	NGO	020 6982999 0733 090030

Other responders who could be future actors include the Department of Defense (DoD), G4S, Ministry of Special Programmes (MoSP), National Disaster Operation Center (NDOC), Kenya Army (KA) and National Youth Service (NYS). The list is not exhaustive.

4.3.1 Gikomba market community

Gikomba market community is the best placed in getting involved in fire management at all levels from reducing risk, fire prevention, response and mitigation. They are strategically positioned as most interested party in fire disaster management. However, at the moment their nature of engagement is quite informal, and to some extent disorganized. Even though they have organized groups for different purposes, there is lack of defined structure on fire management as so; the specific roles they play are not defined.

4.3.2 The Gikomba security team.

Gikomba security team consists of over 100 security men. They are involved in a two tier level of fire management—prevention and response. They have been engaged by Gikomba community who pay them a monthly fee charged per head, but which is mainly negotiable. The techniques they use in fire response include use of twigs and water, they also create boundaries by pulling down structures so the fire does not spread further until Nairobi fire service personnel arrives at the scene. They contact the office commanding station in Shauri Moyo to protect goods from looters in collaboration with the local administration most specifically the District Commissioner, District officer and the area Councilor. They have an established protocol where they call police, contact all the security men and mobilize them; clear boundaries to curb further spread of the fire and finally extinguish the fire. They provided their telephone numbers to the business owners, and therefore are able to communicate during a fire incident. Their Early Warning Systems (EWS) include monitoring any smoke and immediately launching investigation after which they take appropriate action. They do an inspection every other evening especially from ironing areas and food kiosks to ensure that there is no non extinguished fire. A lapse in carrying such inspections would mean another deadly night fire.

4.3.3 Nairobi Fire Service.

The Nairobi Fire Service (NFS) is mandated to save lives and livelihoods in Nairobi and its environs among other mandates making their nature of engagement in Gikomba should be obligatory. NFS is one of the key stakeholders in fire management in Gikomba market. Ideally, they should train on fire safety, for example how to conduct fire drill which should be done twice annually for any institution according to legal notice number 59. They should inspect buildings for fire safety and participate in public safety awareness. They also should ensure that the bylaws on fire safety are enforced and conduct investigations after fires have take place to establish cause and come up with remedial measures.

However, because Gikomba market is an informal market, its status makes it difficult to enforce fire safety regulations. NFS is different from the licensing department and there is a clear disconnect between the two departments of Nairobi City Council which is influenced by a lot of bureaucracy. Sometimes, the community hinders fire response since they become hostile

to the NTS staff. Majority of the respondents (67%) rated NFS engagement in fire prevention and response as ineffective.

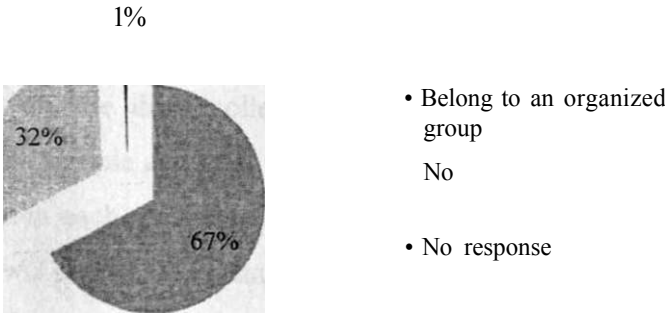
4.3.4 Kenya Red Cross Society .

The Kenya Red Cross Society is a stakeholder in fire response. They do not respond to the fire immediately but are there to offer first aid counseling, tracing and re-uniting families thus offering psychosocial support. Gikomba market is not a priority area per se; but should they learn of a fire, they would communicate to private companies, mobilize resources as well as coordinate response.

4.4 Community mobilization and organization.

The findings revealed that 67% of the respondents belonged to informal organized group within the market while 32% were not. This cut across gender because 50% men and 56% women were organized in groups of between 1 to 40 people, with a high concentration of between 1-10 people. It was observed that gender highly influenced the groupings thus, if the respondent was male, majority of the group members would be male and vice versa.

Chart 3 respondents who belonged to organized groups and those who did not.



It was evident that organized groups in the market did not have a clear mandate on fire disaster management but their core business was to 'empower' each other financially. They would collect money from the members on a monthly or weekly basis then give to one of the members a lump sum on a rotational basis.

There is great potential in these groups as they have huge financial and human resources within them. They are also literate and this demonstrates that the existing groups can be

mandated to handle fire disaster management in collaboration with other stakeholders with clear structures and roles in fire detection, prevention, response and mitigation. It was observed that three major fires and six medium ones that devastated the market especially the one that took place September 6th 2000 happened at night. One can therefore argue that if the fire incidents happen during the day, the level of devastation would be less since Gikomba enjoys strength in numbers.

Responding to the question on how Gikomba market traders can help to prevent fire occurrence in Gikomba market, the respondents indicated that there is need to cooperate with each other and get organized in disaster preparedness and ensure a disaster resilient community. When mandated in the area of fire disaster management, they are able to ensure there are fire detection devices in the market and ensure food kiosks owners put off the fire overnight and encourage legal connection of electricity among other safety measures. They are well able to control construction of unplanned buildings or structures in the market. They also indicated that there is need to have a fire fighting sub-station in the market manned by trained fire personnel.

4.5 Challenges/constraints encountered.

4.5.1 Sampling

The researcher noted that the number of traders in second hand clothes and shoes were more than was obtained from Pumwani ward licensing officer of Nairobi City Council. This is because not all the daily collection is recorded by the council, which was the basis of calculating the sample and so as it was; was an understatement. For wholesalers, the researcher observed that in each go-down or stall, the license reflects one person but the space is shared by more than two people depending on the size. See appendices for pictorial observation. The explanation for this is because stalls in the market are expensive depending on where they are located, so sharing the business premises will spread the cost.

4.5.2 Research interview

The researcher did not succeed in securing an interview with the head of G4S and therefore the interview was unsuccessful.

CHAPTER FIVE

Conclusion and recommendations

5.0 Introduction

This chapter contains summary of the findings, conclusion and recommendations and including areas of further research. The study was conducted in Gikomba to analyze community organizing in achieving resilience to fire disasters, it focused on Gikomba traders' action to contain the ever increasing threat of fire disasters in the area of prevention, response and mitigation.

5.1 Summary of the findings.

Demographic characteristics of 143 respondents focused on gender, age, education level, their nationality, their position in business and the years they have operated the business - thus revealing the basic characteristics of Gikomba market community. Among the respondents, 36% were females and 64% were males. The respondents' age distribution findings revealed that cumulatively, 74% of the traders in Gikomba are at their most productive age group; that is "age bracket' 26-45. The traders' age distribution informs this research that majority are capacitated in achieving resilience to fire disasters in Gikomba because they not only have the physical strength but they also had intellectual capacity to understand issues to do with fire disasters as majority of them are educated up to secondary level and therefore they have the ability to absorb and recover from the effects of a hazard in a timely and effective manner. However, it was observed that the market lacks basic guidelines on what to do in case of fire, clearly displayed in strategic positions for all to understand and adhere. The study also revealed that Gikomba community traders include other nationalities.

The findings indicated that 83% of the respondents were owners of the business. What these findings revealed is that the owners have an upper hand when it comes to making informed decisions on fire disaster prevention, mitigation and response. They are capable of committing resources towards risk identification, risk reduction and risk transfer for insurance

and financial protection. Trends were observed where those who had been in business for 6-10 years were leading in business ownership followed by those who have operated their businesses for 1-5 years and 11-15 years respectively. Overall, the pull towards investment by owning the business was observed. However it was regrettable that the pull factors was not commensurate with disaster resilience as majority of the traders focused on the short term gains instead of the long term ones.

Cumulatively, 58% of the respondents indicated that they had witnessed between 1-5 fire incidents. Those who had witnessed 6-10 fires were 26% while those who had witnessed 11-15 fire incidents were 6%. What these findings informed the research is that the level of awareness of fire disasters in Gikomba market is high due to past experiences of major fires that have destroyed lives and livelihoods worth millions of shillings. The findings revealed those who have been in business longer have experienced fewer fires incidents than those who have been in the business for a short period. Normally, the reverse should be true. The picture that is painted above by the findings indicates that Gikomba community is highly vulnerable to fire disasters, whose frequency appears to be increasing. Majority of the respondents indicated that there was high probability of fire to break in the market. They also indicated that fire response efforts have been ineffective. Majority of the respondents did not have emergency telephone numbers and they did not know of any firefighting and detection equipment present in the market. They also indicated that their business was not insured against risks.

The fire occurrence as reported would be caused by illegal connections of electricity thereby causing electric overloads, hot charcoal originating from iron boxes and charcoal stoves used by food kiosk owners. The smokers butts dropped in a not too careful manner; acts of arson; congestion in the market, the materials used for constructing the sheds and stalls being of flammable materials were sighted as causes. It was observed that uncollected solid waste also contributed to fire disasters.

The findings revealed that 67% of the respondents belonged to informal organized group within the market. There is great potential in these groups as they have huge financial and human resources within them. They are also literate and this demonstrates that the existing groups can be mandated to handle fire disaster management in collaboration with other stakeholders with clear structures and roles in fire detection, prevention, response and mitigation. Responding to the question on how Gikomba market traders can help to prevent fire

occurrence in Gikomba market, the respondents indicated that there is need to cooperate with each other and get organized in disaster preparedness and ensure a disaster resilient community. However, it was evident that organized groups in the market did not have a clear mandate on fire disaster management but their core business was to 'empower' each other financially.

5.2 Conclusion

Whether a disaster is major or minor, of national or local proportion, it is the people at the community or village level who suffer most its adverse effects. They use coping and survival strategies to face and respond to the situation long before outside help comes. They are there when the disaster strikes, providing the necessary volunteer services needed while at the same time using locally available resources. The community plays a pivotal role in reducing risk and creating a disaster resilience community within them.

The community in Gikomba is not organized towards achieving resilience to fire disasters. Rather, they are organized to achieve other short term economic gains. Even though their level of awareness regarding fire disasters is high, their view and perception of risk varies. There are those who were ignorant of their vulnerability thereby deliberately exposing themselves and others to fire disasters— clear progression of a hazard to a disaster, as disaster crunch model mentioned earlier demonstrates. The research findings indicated that the hazards are increasing while at the same time, the elements are highly at risk. Further, Gikomba community operates as a complex system. Regrettably, lack of having an organized community towards disaster resilience can cause dysfunction in the system causing disequilibrium as structural-functional theory proposes.

Finally, Gikomba community is faced with the challenge of the frequent fires; they are unable to make good choices that will eventually end with desirable consequences - making them disaster resilient people. As discussed earlier in this research project paper, lack of consistent mobilizing and organizing of Gikomba community towards disaster resilience causes increased levels of vulnerability to fire disasters. The gist of disaster release model is to minimize disaster effects to lives and livelihood of any given community. When hazards in Gikomba are reduced, the elements at risk protected, safe conditions enhanced, pressure released and underlying addressed assures that Gikomba achieves a disaster resilient status— that has to be sustained; and that is where the challenge lies.

5.3 Recommendations

It is also needful that the community commits resources towards risk identification, risk reduction and risk transfer as they focus on long-term business gains instead of the current short term gains. They also should help prevent fire occurrence in Gikomba market by adhering to the bylaws which require them to fix fire extinguishers in their business premises. Further, there is also need for the traders to be regulated by the relevant authorities.

There is need to carry out a VCA where elements at risk are identified, hazard mapping done and general factors contributing to vulnerability identified. The capacities that exist among the community members to prevent fire disasters need to be established. It is important to establish ICS so as to ensure cooperation and strong working relationships and partnering with other cross border incident responders before and after fire disaster occurs.

It would also be important to train traders on fire prevention, response and mitigation. Issues to be included in the training are awareness creation on fire safety, fire prevention, immediate fire response, first aid during fire emergencies. The training can easily take effect when traders are organized and mandated in the area of fire disaster management.

Since Gikomba traders are organized for different purposes, they can be sensitized to also get organized to ensure a community that is resilient to fire disasters as the common denominator or unity of purpose by having own trained disaster management personnel. Overall, community organizing in achieving resilience to fire disasters need to cut across all the age distribution indicated above.

Gikomba community's capacities and skills in disaster resilience need to be identified while at the same time, recognizing varying degrees of vulnerabilities determined by age, gender and physical disabilities. What is required is to have them organized in such a way that such capacities are supported and utilized to benefit current and future generations. When done, traders would take actions such as enhancing community coping capacity and livelihoods allowing them to make appropriate choices within the context of their environments. This is because; resilience is rooted in making choices about future losses when economic development

decisions are made. For them, choosing what is lost in future fire disasters is a proactive measure as it places 100% responsibility for those losses on themselves.

Gikomba market is one the major boosters of Kenyan economy and therefore service providers need to carry out frequent inspection on the state of their services for early intervention for every case of vulnerability detected. Fire prevention and response services need to be decentralized where a substation can be established in the market. Clear guidelines on what to do in case of fire, should be clearly displayed in strategic positions for all to understand and adhere.

5.4 Areas of further research

There are three areas that can be suggested for further research. Firstly, it would be interesting to find out why Gikomba community traders have not organized themselves towards fire disaster resilience. Secondly, further research can be carried out to ascertain whether mismanagement of solid waste serves as trigger to fire disasters in Gikomba. Thirdly, it would be important to probe why the frequency of fire disasters in Gikomba are increasing.

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Appendices

M

The above is a list of the names of the respondents in Gikomba market. This is in part
a Master of Arts (MA) degree in Advanced Disaster Management at the University of Nairobi. I
am kindly requesting you to assist in responding to the questions below. Any information given
will be treated in confidence. Your cooperation will be highly appreciated. Thank you in advance.

at

1. How long have you been Chairman of the market?

2. What other positions have you served?

3. In general, are you satisfied with fire incidences in the market?

4. How many have you responded to, if any?

5. Do you have people serving under you who directly deal with fire prevention, response and
mitigation? If yes

6. a. What are their positions?

7. Do the duties of your committee include fire prevention in Gikomba market?

8. If yes, Please specify

9. What are their qualifications?

10. Is there an established response protocol?

11. If yes, Please specify

12. What are the early warning systems put in place?

13. Have you responded to any fire disasters in Gikomba market before? If yes

a. Approximately how many?

b. How did you learn of the fires?

c. How were these fires extinguished?

d. What were the general effects of the fire?

14. What do you suppose are the major causes of fires in Gikomba?

Appendix 1

Interview guide for Chairman of Gikomba market

Greetings.

My name is Wanjiru Ngunyi. I am carrying out a study on community organizing in achieving resilience to disasters: The case of fire disasters in Gikomba market. This is in partial fulfillment of a Master of Arts (M.A) degree in Advanced Disaster Management at the University of Nairobi. I am kindly requesting you to assist in responding to the questions below. Any information given will be treated in confidence. Your cooperation will be highly appreciated. Thank you in advance.

1 How long have you been Chairman of the market?

2. What other positions have you served?

3. As a member, can you remember fire incidences in the market?

4. How many have you responded to if any?

Do you have people serving under you who directly deal with fire prevention, response and mitigation? If yes,

a. What are their positions?

Do the duties of your committee include fire prevention in Gikomba market?

If yes; Please specify

What are their qualifications?

8. Is there an established response protocol?

If yes, Please specify.

9. What are the early warning systems put in place?

Have you responded to any fire disasters in Gikomba market before? If yes

a. Approximately how many?

b. How did you learn of the fires?

c. How were these fires extinguished?

d. What were the general effects of the fire?

What do you suppose are the major causes of fires in Gikomba?

12. **So far what are the achievement in the areas of;**
 - a. **Fire prevention**
 - b. **Fire occurrences**
13. **What are some of the challenges you encounter when you are responding to fire disasters in Gikomba?**
14. **What do you think should be done to prevent fire disasters in Gikomba Market?**
15. **What fire safety measures should be taken in Gikomba market?**

Appendix 2

Interview guide for Kenya Red Cross Society

Greetings.

My name is Wanjiru Ngunyi. I am carrying out a study on community organizing in achieving resilience to disasters: The case of fire disasters in Gikomba market. This is in partial fulfillment of a Master of Arts (M.A) degree in Advanced Disaster Management at the University of Nairobi. I am kindly requesting you to assist in responding to the questions below. Any information given will be treated in confidence. Your cooperation will be highly appreciated. Thank you in advance.

As Kenya Red Cross Society, do you respond to fire incidences in general?

2. What are your specific roles?

Have you ever responded to fire incidences in the Gikomba market in last 12 years?

4. Specifically, what was your contribution in putting off the fire?

What would you say are your major challenges in responding to fire as an organization in the following areas:

- a. Training personnel
- b. Fire fighting gear
- c. Successfully accessing the affected areas?
- d. The actual fire fighting.

What are some of the measures your organization is putting in place in preventing fires?

What do you think should be done to help curb fire disasters in Gikomba Market?

Appendix 3

Interview guide for Nairobi Fire Service officer

Greetings.

My name is Wanjiru Ngunyi. I am carrying out a study on community organizing in achieving resilience to disasters: The case of fire disasters in Gikomba market. This is in partial fulfillment of a Master of Arts (M.A) degree in Advanced Disaster Management at the University of Nairobi. I am kindly requesting you to assist in responding to the questions below. Any information given will be treated in confidence. Your cooperation will be highly appreciated. Thank you in advance.

1. As Kenya Fire Brigade, what is your mandate?
2. As Kenya Fire Brigade, what is your administrative structure?
3. As Kenya Fire Brigade, what are your specific roles in fire prevention, response, mitigation?
4. Have you responded to any fire disasters in Gikomba in the last 12 years?
 - a. If yes, how many?
5. What are the measures you put in place to ensure fire safety in Gikomba market?
6. What are the measures you have put in place to ensure efficiency in responding to fires?
How cooperative are market traders in fire prevention, response and mitigation?
8. What are some of the challenges that you face enforcing fire safety regulations?
9. What are some of the strategies of preventive measures that have been put in place to help curb the rising cases of fire disasters in Gikomba?
10. What recommendations would you suggest that can improve management of fire emergencies in Gikomba?

Questionnaire to Gikomba market community

Greetings.

My name is Wanjiru Ngunyi. I am carrying out a study on community organizing in achieving resilience to disasters: The case of fire disasters in Gikomba market. This is in partial fulfillment of a Master of Arts (M.A) degree in Advanced Disaster Management at the University of Nairobi. I am kindly requesting you to assist by completing this questionnaire. Any information given will be treated in confidence. Your cooperation will be highly appreciated. Thank you in advance.

Section A

1. Name

(Optional)

2. Sex: Male • Female •
3. Age Group •
- 15-25 •
- 26-35 •
- 36-45 •
- 46-55 •
- Over 56 years •
4. Education level •
- Not been in school •
- Primary Level •
- Secondary level •
- University level •
5. What is your nationality
- a. Kenyan
- b. Tanzanian •
- c. Ugandan
- d. Other • (please specify)
6. Position in Business:
- Owner •
- Employee
- Other • Please state

Is your business insured?

- a. Yes •
- b. No •

If yes.

8. Which insurance company

9. How much is the premium

Section B

10. How long have you operated this business?

- a. 1-5 years •
- b. 6-10 years •
- c. 11-15 years •
- d. 16-20 years •
- e. Other (please state)

11. Do you belong to any organized group with other traders?

- a. Yes •
- b. No •

If yes

12. How many are you in the group?

- a. How many women
- b. How many men_

13. Are you aware of any fire fighting/detection device in the market?

- a. Yes •
- b. No •

If yes, please name:

14. Do you have emergency telephone numbers for the nearest fire service station?

- a. Yes •
- b. No •

15. If yes, please list below.

16. What do you do in the event of a fire? Please tick all those that apply and prioritize them.

	Tick all that apply	Priority
a. Run as fast as possible	<input type="checkbox"/>	<input type="checkbox"/>
b. Rescue some property	<input type="checkbox"/>	<input type="checkbox"/>
c. Shout for help	<input type="checkbox"/>	<input type="checkbox"/>
d. Put out the fire with whatever is available	<input type="checkbox"/>	<input type="checkbox"/>
e. Call the fire brigade	<input type="checkbox"/>	<input type="checkbox"/>

17. What is the probability that fire would break in this market?

- a. High
- b. Medium
- c. Low

If high or medium, please explain.

18. About how many fire incidents have you experienced in this market in the last 12 years?

- a. 1-5
- b. 6-10
- c. 11-15
- d. Uncountable
- e. None

19. What was the estimated loss?

Incidents _____ loss

20. How would you rate the response and actual fighting of the fire in those incidences?

- a. Not effective
- b. Effective
- c. Very effective

21. What would you say are the main causes of the fire in the market?

22. How do you rate the present Nairobi fire Brigade in responding to fire outbreaks?

- a. Inadequate •
- b. fair** •
- c. Adequate** •

23. What are the challenges that you face in fire prevention, response and mitigation?

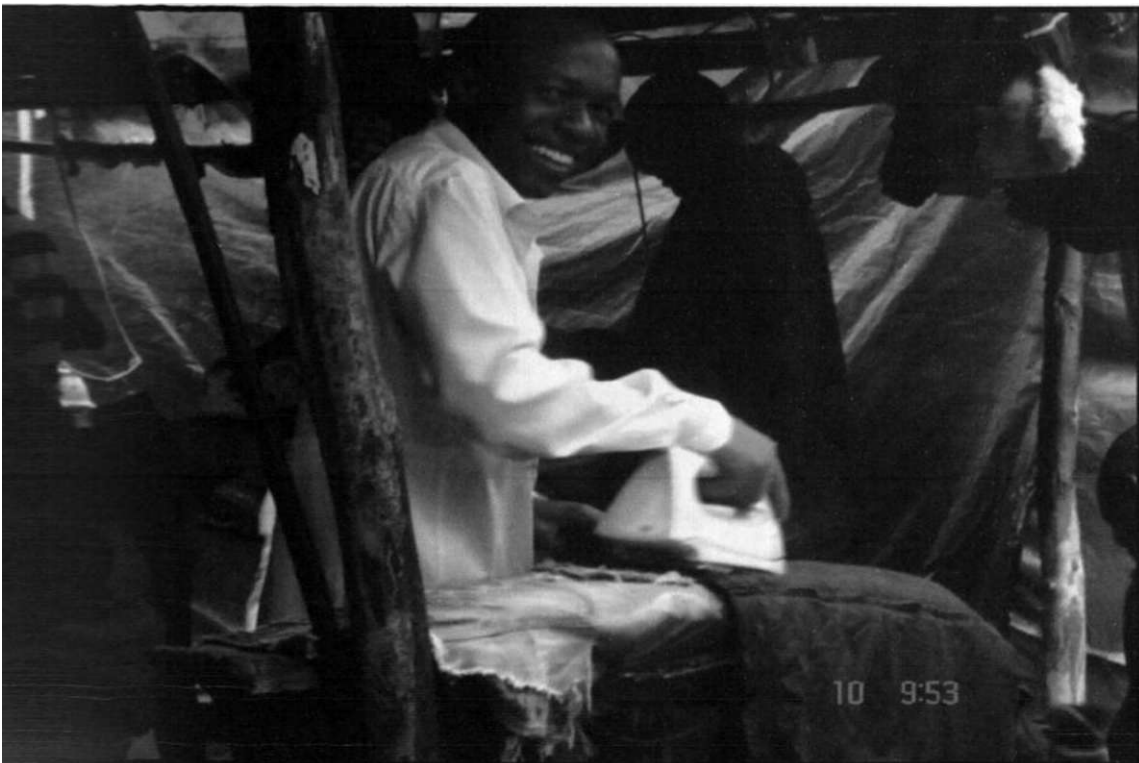
24. How can Nairobi fire Brigade improve their fire services in Gikomba market?

25. How can Gikomba market traders help to prevent fires occurrence in the market?

Thank you

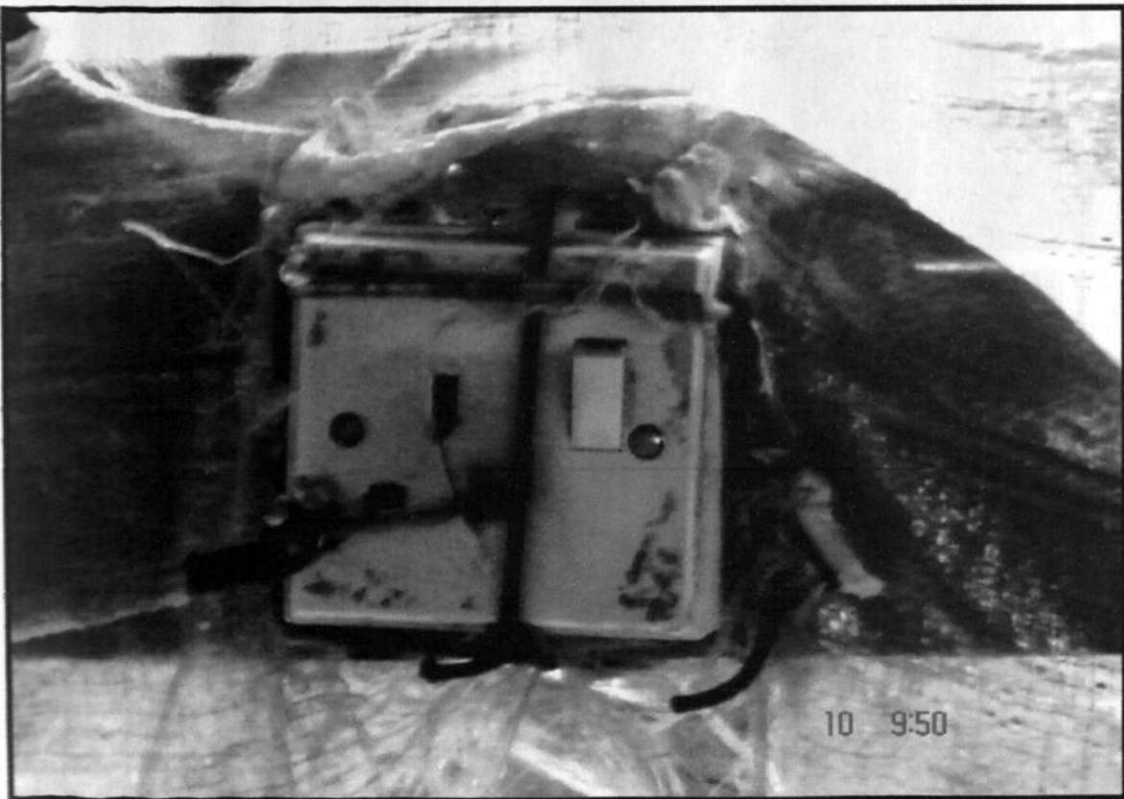
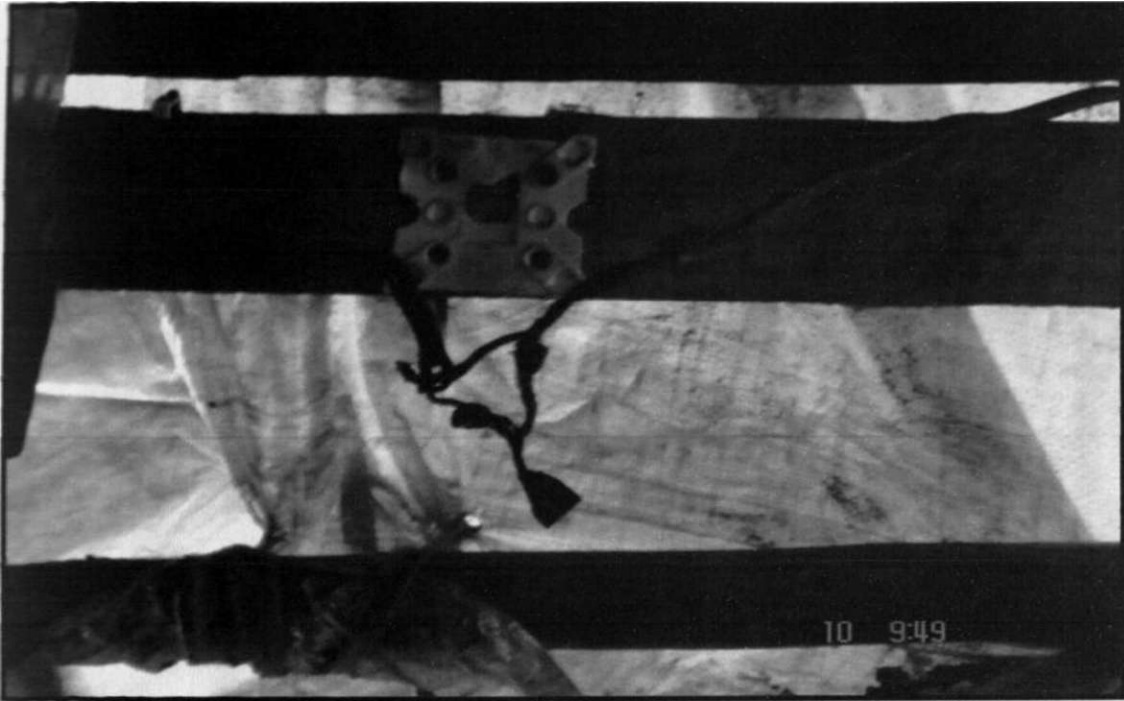
Appendix 5

Young men busy ironing using electric iron boxes.



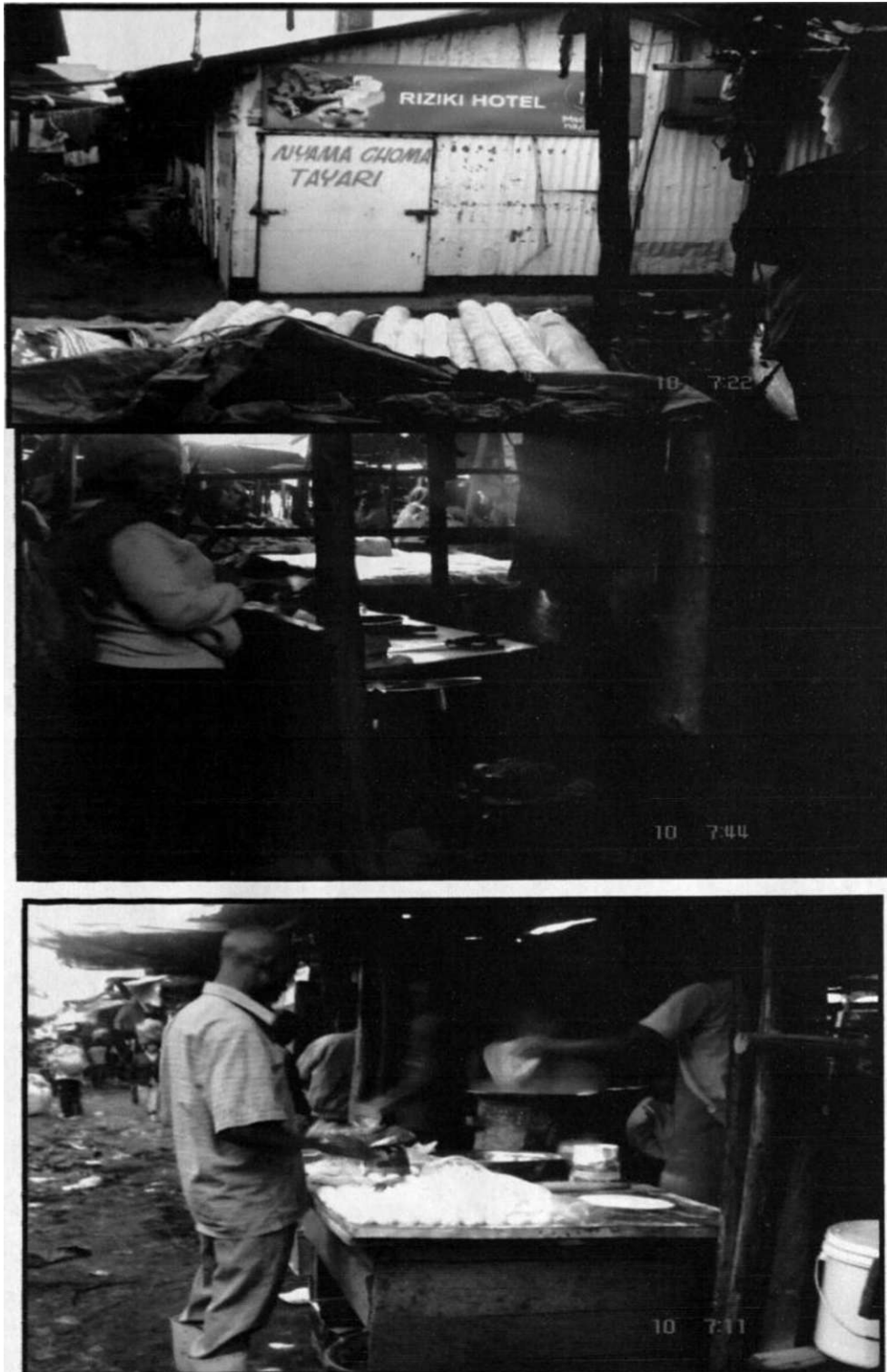
Appendix 6

Illegal connection of electricity being used by electric ironers



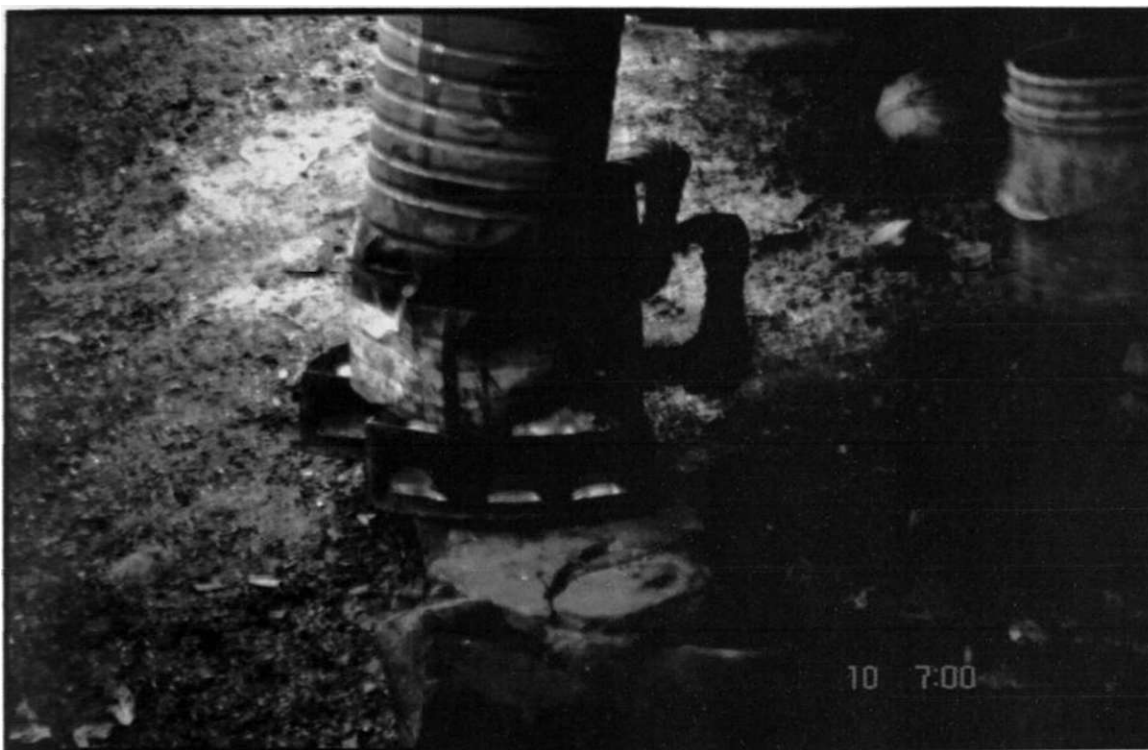
Appendix 7

Some of the food kiosks in different locations of the market



Appendix 8

Charcoal iron boxes in use.



Appendix 9

Litter burning by traders



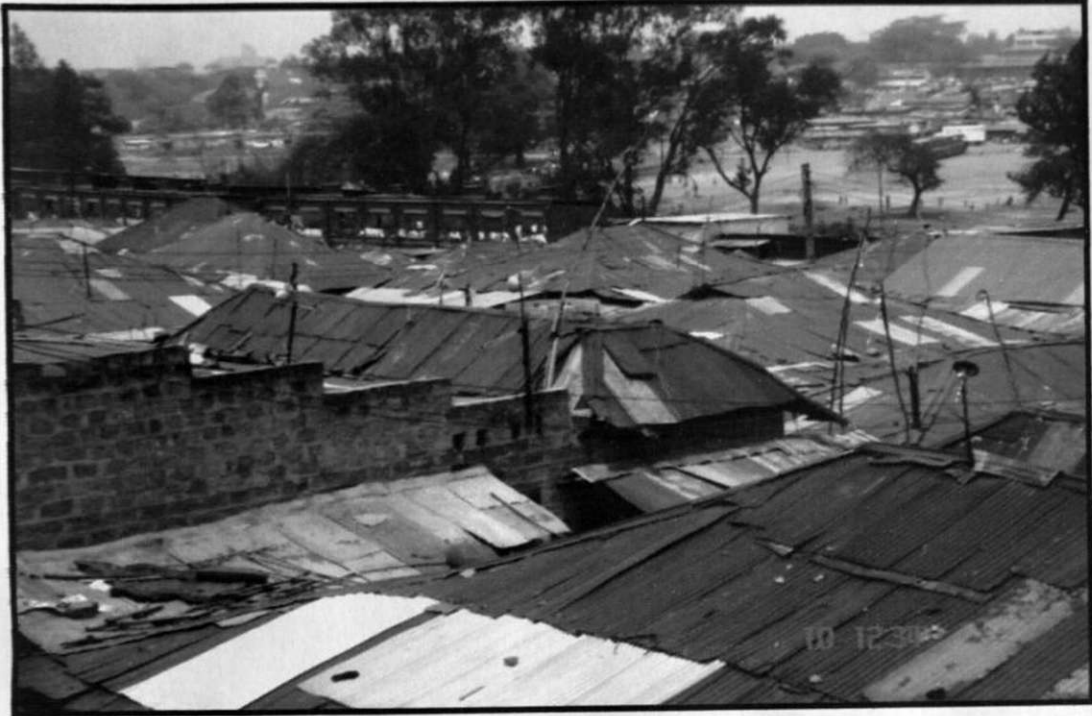
Appendix 10

Unmanaged solid waste.



Appendix 11

An elevated view of a congested market.



Appendix 12

Flammable materials in use in the market.

