

URBAN ENVIRONMENTAL MANAGEMENT: A CASE STUDY OF THE
KARIOBANGI SLUM, NAIROBI CITY COUNCIL, KENYA.

BY

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DECLARATION

I, Mwalukware .D. Getrude solemnly declare that the work presented in this thesis was written by me and that it has never been presented to any Institution for any academic award. Where other people's material has been used, due acknowledgement and appreciation has been extended.



Mwalukware .D. Getrude

APPROVAL

This Research project has been submitted for examination with my approval as the University Supervisor.

Signature..........

Date.....19.7.2010.....

Dr. Twaha Ali Basamba

DEDICATION

This work is dedicated to my family and all the people who have always been there for me, during challenging times of my life.

ACKNOWLEDGEMENT

I wish to acknowledge the tremendous contributions that various individuals have rendered in order to make this academic dream a reality.

I first and foremost want to appreciate my supervisors, Dr Twaha. A. Basamba for the time and expertise rendered to me during this study. Hope to work with them in future as I pursue further studies. May God bless them.

Secondly I appreciate the input of the community of Kariobangi, whose contribution and openness made my task easier.

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LIST OF ACRONYMS

CAP	Community Action Plan
CAPP	Catchment a forestation Pilot Project
CBG	Community Based Group
CBO	Community Based Organization
CRO	Child Restoration Outreach
DANIDA	Danish International Development Association
DFO	District Forest Officer
FD	Forest Department
FGD	Focus Group Discussion
GDP	Gross Domestic Product
IGAD	Inter Governmental Authority on Development
LC	Local Council
LGDP	Local Government Development Programme
MOA	Ministry of Agriculture
MOH	Ministry of Health
NARO	National Agriculture Research Organization
NEMA	National Environment Management Authority
NRBP	Nairobi River Basin Programme
NGO	Non Governmental Organization
PRA	Participatory Rural Appraisal
SPSS	Statistical Package for Social Scientists
UNEP	United Nations Environment Programme
UNFPA	United Nations Fund for Population Activities

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ABSTRACT

Building strong partnerships with urban authorities can enhance development and environmental conservation. The purpose of the study was to establish persistent environmental concerns in the study area and try to understand how the community is addressing them. A qualitative approach was used involving use of questionnaires, interviews, FGDs and PRA tools to gather primary data, while reference to relevant literature provided secondary data. Key informants for the study included; leaders of CBOs, CBGs, NGOs and Local government department heads.

The study revealed that solid wastes, diseases and poverty were still persistent environmental issues in the slum. The three main concerns are linked in a way. The solid wastes can enhance disease, while poverty can deter effective urban environmental recovery. The study notes that poverty may not be the ultimate root cause of environmental degradation, and considers the strength of partnerships in the slums. These partnerships are weak due to the nature of organizational structures of the groups, heterogeneity within the community, land tenure ship type and the transient nature of these communities.

The study makes a number of recommendations which are based on making stronger ties within the slum community. It emphasizes addressing the community groups and organizations in Kariobangi as a focal point in conservation. Sensitization, empowerment, planning, implementation and monitoring, should be left to these partners in development and conservation.

CHAPTER 1

1.0 INTRODUCTION

1.1 Background to the study

According to the United Nations, for the first time in history, half the earth's population will live in cities. But lest you imagine a life of urban sophistication for these city dwellers, consider this statistic. An estimated one billion people now live in third world slums. That's about one out of every six people on the planet. And the number of slum dwellers could double in thirty years.

The key resource in all types of settlements is the local population and their participatory involvement through local institutions is essential. Successful settlement depends on the cumulative result of decisions made by the many settler families. The decisions result from their perceptions of risks, opportunities and constraints and the extent to which their potential interests are promoted. Without their interest, commitment and participation in planning and implementation in establishment of settlements, nothing can succeed (Della Mc Millan, 1992).

At present, many Non Governmental Organizations (NGOs) and Community Based Organizations (CBOs) are involved in awareness conservation campaigns aimed at mobilizing and training communities in a bid to conserve the Kariobangi slum environment. As a result, there has been drastic increase in initiatives and practices by urban local slum communities in environmental conservation.

The Government of Kenya, through its 1995 constitution, also acknowledges the role of communities in environmental conservation, although the institutional linkages and structures to incorporate CBOs and their initiatives remain weak and inadequate.

This study sought to address why, despite improved community initiatives in environmental conservation around the city of Nairobi and in particular Nairobi city, the

communities surrounding the river still encounter difficulties in maintaining environmental resources and infrastructure.

1.2 Problem Statement

The formation of formal sector urban jobs is well below the expected growth rate of the urban labor force. So, in all probability, the preponderance of the new residents entering cities ekes out an informal living and will live in slums. Informal settlements (slums) arise as a staging ground for people who are temporarily in difficulty, a place where they can live cheaply until they establish themselves. However, social segregation, lack of empowerment, illness, or living in a precarious and illegal situation makes it very difficult for slum dwellers to do more than survive. In search for the basic needs of survival, these new entrants unsustainably utilize resources within their reach leading to resource degradation.

Kariobangi is one of the slums in Nairobi city. In a poverty survey, It was established that the slum dwellers in this area have greatly degraded the environment through improper waste disposal and unsustainable harvesting of resources (De Satge *et. al.* 2006).

In a bid to reverse the adverse effects of environmental degradation in Kariobangi, five major interest groups are involved, that is; the central government, local government, community based organizations(CBOs), Non government organizations(NGOs) and the individuals within the community. Several communities in Kariobangi have been mobilized, organized and trained in environmental skills for the improvement of their livelihoods. However, despite these efforts, the problems of environmental degradation still persists. This study focused on why there is limited knowledge of the capacity of community groups to control and manage the urban environment for sustainable development.

1.3 Objectives of the study

General objective

The main aim of this study was to find out the nature and type of existing community initiatives in managing the slum environment in Nairobi city.

Specific objectives:

The specific objectives of this study were:

- To recognize unrelenting environmental concerns in Kariobangi slum
- To ascertain the nature and level of organization of community initiatives in managing environmental recovery in a slum.
- To evaluate the socio-economic factors that impedes or facilitates community organization and participation in environment planning and organization in slums.

1.4 Research questions

The main research question for this study was to establish why community initiatives and resources that exist in informal riverside settlements are not effectively used in enhancing better environmental conservation.

In order to address the specific objectives of the study, the following questions were posed:

- What are the persistent environmental concerns in the urban slums.
- What is the nature and level of association of community initiatives in managing the environment.
 - What are the factors and conditions that limit or facilitate environment conservation efforts within informal urban settlements.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 Human population and environmental stress

The past two centuries have seen increases in numbers of people and technological use. Humans have become the de facto managers of the planet. The demands of humans, and the processes put in place to satisfy them, have caused environmental stress. Each of these actions has the potential for repercussions that can affect the capacity of the ecosphere to continue to support global and local ecosystems. But while our ability to bring changes to the planet has grown at a great rate, our capacity to manage the impacts of these changes has not kept pace (Kumar et al., 1993).

In many cities, the rapid pace of population growth and enormous size of the population have overwhelmed the capacity of municipal authorities to respond. Millions of people in the developing country cities cannot meet their basic needs for shelter, water, food, health and education (The Global report on Human settlement, 1996).

NEMA (1999) observes that the rapid increase in the urban population has not matched with growth and development in basic physical infrastructure, housing, social amenities, management and skills. This has in turn led to overcrowding, spread of squatter settlements, dilapidated housing (slums) and poor sanitation. For many urban informal settlements, the poorly designed housing units are in a dilapidated state due to lack of repair and maintenance over time. Such units lack services such as water supply, sanitation and other infrastructure.

The incomes of slum dwellers are in most cases too low for formally regulated markets to provide them with any kind of permanent housing. They have acted to solve their own problems by building their own dwellings, or building informal rental accommodation for each other. Rather than being assisted in their efforts by governments, they have been

hounded and their homes frequently demolished, they have been overlooked when basic services are provided, and they have been ignored and excluded from normal opportunities offered by other urban citizens (The Global report on human settlement, 2003).

Poor or biased policies with regard to land are also an enormous obstacle in the path of the poor in their search of a place to live. In many developing countries, the legal and regulatory frameworks, particularly with regard to land markets and land acquisition, including land registry, land valuation and legal instruments to facilitate land acquisition are ineffective. This has in turn led to the proliferation of informal settlements.

Slums are products of failed policies, bad governance, corruption, inappropriate regulation, dysfunctional land markets, unresponsive financial systems and a fundamental lack of political will (The Global Report on human settlement, 2003).

2.2 Challenges of Informal urban settlements (slums) around Nairobi River

Rapid urbanization has led to urban sprawl and physical infrastructure deficiencies as well as depletion of natural resources and increased discharge of unprocessed wastes in the environment resulting in severe health problems. The main issues concerning urban areas in Kenya are proliferation of slums and unplanned settlements, water, sanitation and solid waste management (NEMA, 2001).

The problem of solid waste management in urban areas is too big, resulting in careless and indiscriminate open waste-space dumping, which has created unsanitary conditions on streets and alleys in urban centers. Such nuisance dumps lead to unpleasant odours and are fertile ground as breeding sites for flies and vectors. They may also result in the pollution of both surface and ground water through the leachate and impairing the permeability of the soils, as well as blockage of the drainage systems (NEMA, 1999).

2.3 Community initiatives in managing environmental recovery around the Nairobi slums

The tree-planting site of a delegation during COP 12 exactly three years ago when the conference was held in Nairobi. Over 100 trees were planted here to commemorate the signing of the Emissions Reductions Purchasing Agreement (ERPA) between GBM and the World Bank. The high level delegation included the President of the Swiss Confederation, His Excellency Moritz Leuenberger, Ministers of the Environment, Members of Parliament, over 100 grassroots members of GBM, NGO representatives, and representatives from Kenya's Forest Department. The tree planting event as it took place in November 2006, started a new era in environmental improvement drive. This steered up the participation of the local communities in this area affected by overgrazing, frequent fires, increasing population and excessive tree cutting which led to severe soil erosion.

2.4 Socio- economic factors that impede or facilitate Community organization and participation in environmental planning and management

Zillman (2002) noted that several decades ago, public participation meant the assertion of public values by government. Today, he observes that the term has acquired a more expansive meaning. Modern public participation often looks upon government as part of the problem and not necessarily the solution. In order to have successful environmental programmes, participation of the local communities is very important right from the initiation of the project.

Taylor and Balloch (2005) noted that the involvement of central actors is essential in environmental management and should take precedence over practitioners and evaluators themselves. They too contend to sharing the learning since it encourages participation. Unless the people are directly and/ or indirectly involved in the organization and participate in environmental planning and management, their level of participation will be minimal.

Zillman (2002) considers public participation as a phenomenon where members of the public have a right to gather information about major developments from government and the developer, so that they have the right to participate in legislative and administrative proceedings that consider the propriety of the project, and that they have “access to justice” that reflects their ability to bring questions about the project to an independent judiciary.

CHAPTER 3

3.0 MATERIALS AND METHODS

3.1 Description of the study area

Kariobangi is a low-income residential estate in northeastern Nairobi, Kenya. It composes of both apartments and slum-type dwellings. It is split into two parts, Kariobangi North and Kariobangi South. The northern part was constructed first, with first buildings built in 1961.

The estate is served by one City council maintained school - the Kariobangi South Primary school and a number of nursery schools and kindergarten. Churches include a Catholic Church, PCEA and the AIPCEA Churches - all which are within a stone through distance from each other, even though a number of other churches have since established a presence in the estate. The estate is also served by the City owned and run Kariobangi South Market, which previously catered for all the residents shopping/entertainment needs, but whose stature has of late been seriously eroded by the ever upcoming and rising mini-supermarkets and roadside kiosks.

The growth of squatting in Nairobi

The no of squatters has increased enormously since 1964 estimate of between 600,000 to almost two million slum dwellers would not be too far off. Most of which in the mathari valley ,an area north and east of the city center which ends near the edge of kariobangi estate . There is a large squatter's village 100 yards across the road from kariobangi and there are other similar settlements nearby. The city has constructed low-cost housing across the road from kariobangi using labor from the area and mass purchase of

material to try alleviating squatter's growth in this area. However, Kariobangi estate has not solved the problem of squatting. Indeed, it may have encouraged it; squatters can use the water and other service that are now more easily available.

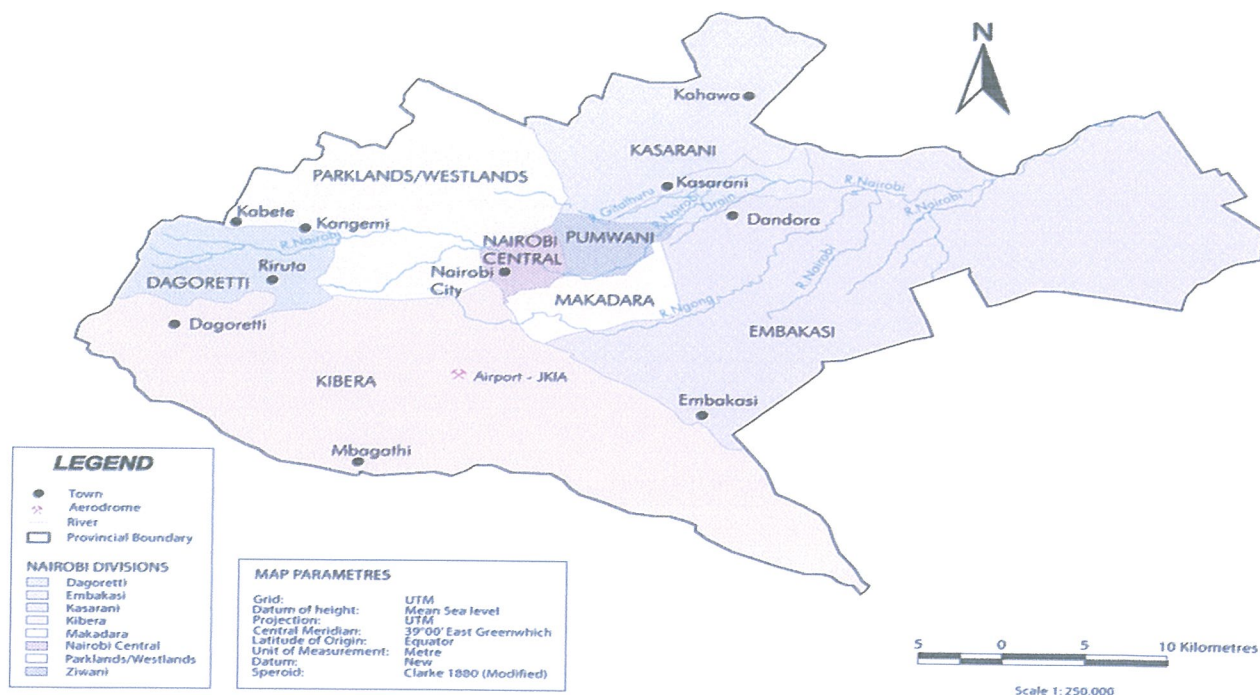
Heads and thirty for adult women: median years for women is six and for women, two. The median monthly income per household is approximately 500ksh and the median farm size for male household heads is 2.5 acres. Most residents work at unskilled or semi-skilled jobs as carpenters, drivers, machine operators, shopkeepers, watchmen, clerks, and so forth.

The city has provided a number of important social services to the residents, including a new, fully staffed primary school, a dispensary and a social center, there is also a self-help nursery school run by local residence, and a number of churches that meet at the estate. These amenities together with regular city bus service, have considerably improved life in Kariobangi from its origin isolated and barren circumstance.

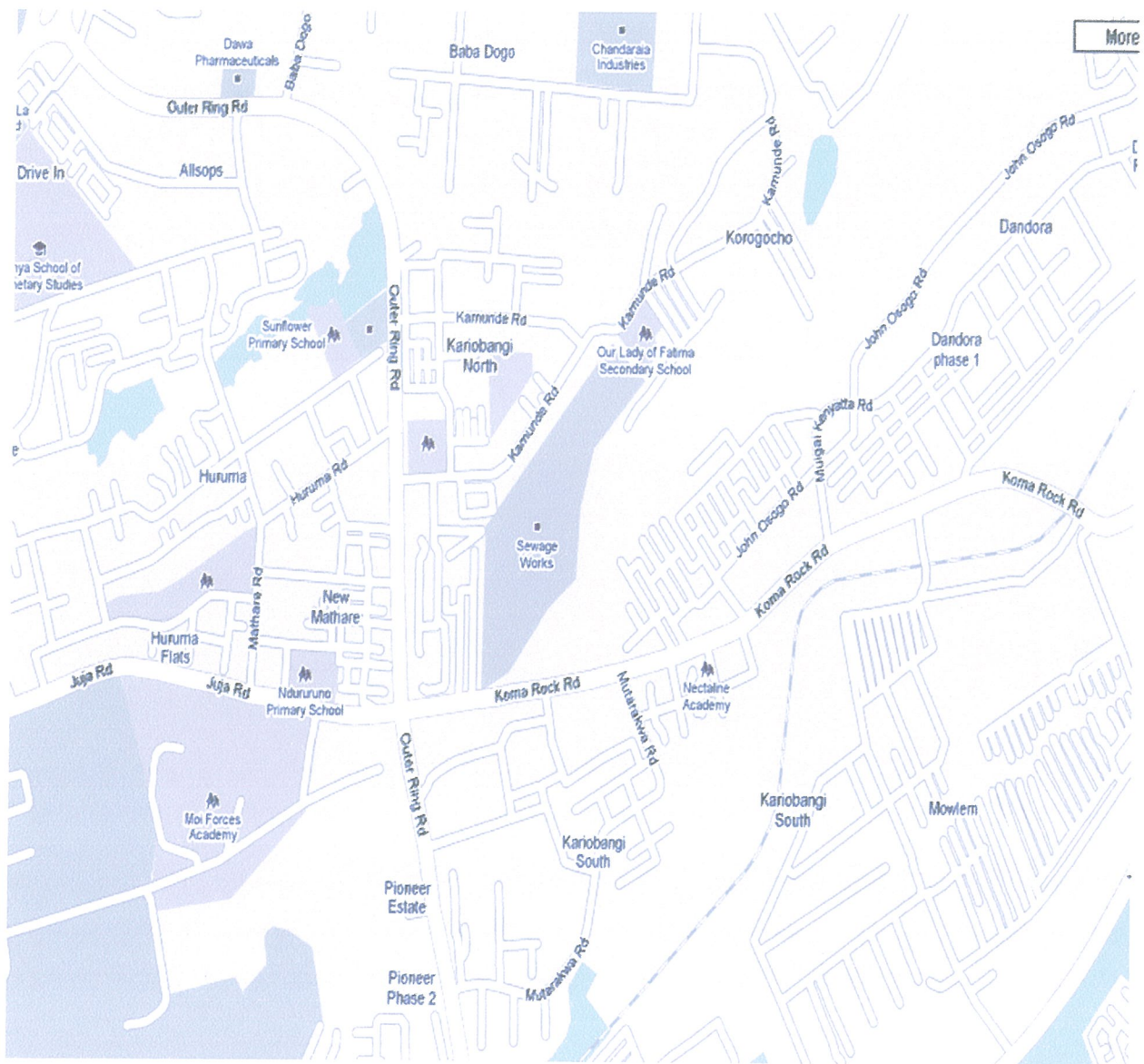
These improvements as important as they are they should not mask the real problems and unpleasant aspects of Kariobangi, lacking fully paved walkways, perpetually dusty when it is dry and is a series of semi-islands surrounded by seas of mud when it rains. There is very little greenery to be found among the densely packed into a single room, within which cooking, eating, cleaning, sleeping and washing occurs. Noise and a lack of privacy are the results. Cars and trucks race along the single paved road that curves through the estate, perilously close to pedestrians, cyclists, and children playing along the roadside. The storm becomes clogged and smelly, garbage and other waste disposal disposed around the area. On weekends and after paydays, the tempo of drinking increases, and the place is jammed with drunks and boisterous visitors. Residents usually complain bitterly of these and other unpleasant and dangerous aspects of Kariobangi life.

Within Nairobi Kariobangi slums, the lack of a functioning sanitation and drainage system is perhaps the greatest daily nightmare slum dwellers must cope with. It is from these

kinds of slums that the euphemism of the "*flying toilets*" came into being. Slum dwellers have a habit of defecating into polythene bags and then throwing them into a nearby footpath, or stream. All of this and much more are as a result of the lack of the most basic services – services that we here take for granted. The residents of the Nairobi slums, each day, must endure the sight of filthy narrow alleys, and sludge and human waste from shallow latrines flowing into nearby streams, a situation, as one can imagine, gets much worse during the rainy season. The lack of latrines and poor drainage leads to the swamping of entire neighbourhoods with dirty water during these rainy seasons. As a result, there are high incidences of disease like typhoid, malaria and diarrhoea



Map showing Nairobi Divisions



Map showing kariobangi

3.1.1 Location

Kariobangi South Estate is straddled by the Outerring Road (on the Eastern part) and the Nairobi - Thika railway line on the Western and southerly parts. Outerring Road joins Kenya's main airport - the Jomo Kenyatta International Airport to the Thika Highway - via the GSU round-about on the North. The neighborhoods bordering these estates include Outerring Road Estate, Buruburu phase 1 extension and Pioneer Estates on the East (along the Outerring Road), Kariobangi North to the North, and Umoja to the South and South Eastern parts. The houses in this estate are varied in design and range from the flats, and maisonettes - including the famous red brick, timber houses (owned by the Nairobi city Council), to the privately owned bungalows.

3.1.2 Climate

Nairobi has a temperate tropical climate with two rainy seasons. Highest rainfall is received between March and April and the short rainy season is between November and December. The mean annual rainfall ranges between 850-1050mm (Lakin undated). The mean daily temperature ranges between 12 and 26°C. It is usually dry and cold between July and August, but hot and dry in January and February (CBS 2003). The mean monthly relative humidity varies between 36 and 55 per cent. The mean daily sunshine hours varies between 3.4 and 9.5 hours (CBS 2003a). The cloudiest part of the year is just after the first rainy season, when, until September, conditions are usually overcast with drizzle.

3.2 Human environment and its characteristics

Ethnic composition:

76% of the district's indigenous Kariobangi population is composed of the Luhya tribe. The second largest ethnic group is the Kikuyu who constitute 5.3% of the total population, followed by the Luo who constitute 4.5% (1991 Population and Housing

Census). The rest of the ethnic groups (39 tribes) make up the remaining 14.3% of the indigenous Kariobangi population.

3.3 Nairobi district administration and land tenure

3.3.1 Administration

Nairobi province is one of eight provinces in Kenya. It is synonymous with Nairobi city, but functions as a State unit. It is the smallest province and is entirely urban. It has only one local authority – Nairobi city – and only one district – Nairobi district. The district is divided into eight administrative divisions and some 50 subdivisions (or locations). Subdivisions are generally named after residential estates. Similarly, divisions are often named after residential estates, but cover a much larger area. For example, Kibera division includes Kibera (the largest slum in Kenya), as well as the affluent estates of Karen and Langata. Provinces are divided into districts, divisions, locations and sublocations. In terms of governance, Nairobi falls under the City Council of Nairobi, which is supervised by the central Government through the Ministry of Local Government. The 1977 Local Government Act is the main legal statute that governs the operations of the council.

3.3.2 Land tenure.

Land tenure refers to the terms and conditions under which rights to land and land-based resources are acquired, retained, used, disposed off, or transmitted. Land tenure regimes in Kenya are fragmented, complex and pluralistic. As in the case of Trust Land (Under Trust Land Act) land rights are quite indeterminate. Land in Kenya shall be owned under the following tenure systems;

- a) public land
- b) community land
- c) private land
- d) Freehold
- e) Lease hold

- f) Resource tenure
- g) Pastoral land tenure

Designate all land in Kenya as Public, Community and Private;

Facilitate the enforcement of the legal rights of access, control, ownership and inheritance, access to credit and co-registration in all tenure systems; Regulate land tenure and ensure security of tenure for all socioeconomic groups, and that women and men have equal access to land for production processes; Protect individual property rights and communal rights in urban and rural settlements through land registration; and Facilitate the protection of intellectual property rights over land and land-based resources.

1. Informal Settlements

The essence of 'informal' or 'spontaneous' or 'squatter' settlements is that it is without secure tenure and/or is unplanned. The problems of 'squatters' and 'informal' settlements continue to present a challenge for development in Kenya. A large proportion of Kenya's population has no decent homes, and live as 'squatters' or in slums and other squalid places.

To deal with the 'squatters' and informal settlements, the Government shall:

- a) Create a regime of secondary land rights as a means of improving security in informal/spontaneous settlements;
- b) Recognize and protect the rights of informal land occupiers and guarantee their security of tenure; and
- c) Establish a legal framework and put in place procedures for transferring unutilized land and land belonging to absentee landlords to 'squatters' and landless people.

Resource Tenure Policy Ownership

All land-based natural resources belong to the People of Kenya collectively as a nation, as communities and as individuals.

To secure ownership of natural resources, the Government shall:

- a) Align, to the greatest extent possible, tenure to land based natural resources to the different land tenure systems namely public, community and private. Where ownership of land-based natural resources are vested in a private entity or community, it shall ensure that they are managed sustainably and in trust for the people of Kenya;
- b) Put in place mechanisms to ensure sustainable management of natural resources for posterity;
- c) Ensure public access to beaches, lakes, rivers and landing sites for fishing; and
- d) In consultation with the communities, identify, map and gazette critical wildlife migration dispersal areas and corridors and provide incentives for the communities to invest in income generating conservation programmes.

To facilitate sustainable management of land resources, the Government shall:

- a) Develop a comprehensive resource tenure policy as part of an overall land use policy for the country. The formulation of this policy will be informed by customary tenure principles relating to the common utilization, protection and development of landbased resources; and
- b) Create an effective institutional framework and capacity to implement International Conventions especially those touching on land related resources. It shall also plan and prioritize action items and principles relating to International Conventions on natural resources that Kenya is a party to. Community Interest and Benefit-Sharing

To protect community interests over land based natural resources and facilitate benefit sharing:

- a) A legal framework shall be established for recognizing community and private rights over natural resources and put in place procedures for use of and access to these resources by communities and private entities;
- b) Devise and implement participatory mechanisms for compensation for loss of lives and damage to property occasioned by wild animals;
- c) Establish mechanisms for the sharing of benefits emanating from natural resources by the People of Kenya and by use of participatory methods, define benefit sharing criteria for natural resources within and contiguous to the jurisdiction of local communities;

- d) Ensure that the management and utilization of land-based natural resources by community entities take into account the need to share benefits with contiguous communities and that such communities are fully involved in the management and development of the resources. It shall revisit the gazettement of forests and protected areas to ensure that these are protected for their intrinsic value to the nation and not through physical exclusion by human beings;
- e) Encourage the development of wildlife sanctuaries and conservancies and involve local communities in the co management of parks with communities living contiguous to the parks and protected areas. It shall also provide mechanisms for resolving grievances of communities arising from human wildlife conflict; and
- f) Recognize and protect the rights of forest dependent or other natural resources dependent communities and facilitate their access, co-management and derivation of benefits from the resources.

Environmental Resource Tenure Principles

The Government shall develop a comprehensive resource tenure policy as part of an overall land use policy for the country.

The formulation of a resource tenure policy shall be informed by customary tenure principles relating to the common utilization, protection and development of land based resources. The Government shall amend the land law system to recognize community rights to natural habitats and natural resources.

2. Community Land

Community land refers to land lawfully held, managed and used by a specific community. This creates a powerful system of land allocation regimes and a tenure system designed to preserve the asset base for current and future generations. Communities traditionally see land and kinship in a genealogical map through which access to land is attained. Families and individuals are allocated rights to use the land in perpetuity, subject only to effective utilization. The ultimate ownership (radical title) vests in the community

The process of individualization of tenure, that is, land adjudication and/or consolidation and the eventual registration of interests in land under the Registered Land Act (Cap 300) has undermined customary tenure in two material respects. First, individualization has undermined traditional resource management institutions with the effect that there are no longer legitimate authorities within the affected communities that can enforce the traditional resource use regulatory mechanisms. Secondly, individualization led to the condemnation of customary land rights not deemed to amount to ownership, such as family interests in land, the rights of “strangers”(for example jodak among the Luo and the ahoi among the Kikuyu),and communal rights to clan land (such as rights to inkutot land

among the Maasai and rights to kaya forests among the Mijikenda).

In addition, there has been widespread abuse of trust in the context of both the Trust Land Act and the Land (Group Representatives) Act. In both cases, the law sought to entrust the management of 16 community land to representatives of the communities. However, the representatives have in many cases abused their trust. Thus county councils, which are the trustees of Trust land, have in many cases disposed of trust land in an irregular/illegal manner. Further, in the case of community land among pastoralists, the group representatives entrusted with the management of that land have in many cases disposed of group land without consulting the land owners.

These communities have not been represented adequately in governmental decision making at all levels since they are relatively few in number. Their political and economic marginalization has also been attributed to the fact that colonial policies assimilated 17 them into neighbouring communities. In addition, the colonial Government alienated their lands through forest preservation policies, which effectively rendered them landless as they were denied the right to live in the forests. Colonial capitalism also led to the marginalization of hunter-gatherer communities at the expense of agricultural expansion.

3. Private Land

Private land refers to land held by an individual or other entity under freehold or leasehold tenure. The Government shall rationalize existing systems of private land ownership.

To secure private land, the Government shall:

- a) Ensure that the alienation of private rights to land takes into account all other legitimate rights or interests (spouses and children rights or interests) held or claimed by other persons over the affected land;
- b) Ensure that all private land is held on terms that are clearly subordinate to the doctrines of compulsory acquisition and the police power of the State;
- c) Ensure that private land is held, alienable and transmissible without discrimination on grounds of sex, ethnicity or geographical origin; and
- d) Subject all private land to common residual rights of the NLC on Behalf of the people of Kenya and the right of reversion to the NLC in case the owner dies without any heirs.

4. Freehold Tenure

Freehold connotes the largest quantum of land rights which the sovereign can grant to an individual. While it confers unlimited rights of use, abuse and disposition, it is subject to the regulatory powers of the State. In Kenya, such interests are individually held under the Registration of Titles Act (Cap 281), the Land Titles Act (Cap 282) or the Government Lands Act (Cap 280). The absolute proprietorship was introduced by the Registered Land Act (Cap 300) with the intention of extinguishing customary tenure and replacing it with rights that would be individually and exclusively held.

Moreover, the difference between the freehold and the absolute proprietorship is a cause of confusion. There is no need to continue these two separate classifications of what is essentially the same form of land tenure. To address and streamline freehold tenure, the Government shall review the law to effect the following:

- a) Merge freehold tenure and absolute proprietorship with the best attributes of each being kept;
- b) Modify incidents of freehold tenure so as to permit resumption of family ownership of land converted from customary tenure, co ownership of land acquired during marriage, prohibition against the sub-division of land held in family ownership, and removal of the principle of absolute sanctity of first registration; and
- c) Regulate the power of the primary rights holder to alienate land in order to ensure that such alienation does take into account all the other legitimate rights or interests (including family rights or interests) held or claimed by other persons over the affected land.

In particular, the law should impose an obligation on the primary rights holder to obtain the written and informed consent of all secondary rights holders before exercising the power to alienate.

5. Leasehold Tenure

Leasehold involves the derivation of rights from a superior title for a period of time, certain or capable of being ascertained and the enjoyment of such rights in exchange for specific conditions including, but not limited to, the payment of rent. Leasehold tenure provides a flexible mechanism for transacting rights in land and for land use control. It is a private contractual right subject to the conditions imposed by the owner and grants exclusive rights to the leaseholder.

To secure leasehold tenure, the Government shall:

- a) Ensure that all leases are issued for a period sufficient to encourage long-term investments in land while also allowing for Government regulation of the use of the land. It will also provide for the renewability of all leases subject to general planning requirements;
- b) Establish mechanisms for creating leasehold interests out of public, community or private land so long as the term of the lease is less than that of the residual term;
- c) Rationalize existing leasehold tenure systems in rural and urban areas;

- d) Ensure effective and sustainable use of land, and promulgate regulations on all tenure categories irrespective of where such land is located;
- e) Ensure that the duration of all future leases will be 99 years or less and subject to revocation if they do not conform to approved development conditions; and
- f) Ensure that leases for settling the urban poor are designed to take into account the principles of security of tenure, upgradeability, affordability and collective ownership.

6. Public Land

Public land comprises all land owned by the Government and dedicated to a specified public use or made available for private uses at the discretion of the Government. To secure tenure to public land, the Government shall:

- a) Designate and keep an inventory of all public land and place it under the National Land Commission (NLC) to hold and manage in trust for the people of Kenya;
- b) Establish an appropriate land taxation system to mobilize revenue and discourage land speculation;
- c) Repossess any public land acquired irregularly;
- d) Facilitate the establishment of participatory and accountable mechanisms for the development and disposal of public land by the NLC
- e) Continue to enforce existing legal provisions relating to the allocation of public land and establish a clear legislative framework and procedures for future allocation of public land to eliminate incidents of misallocation or multiple allocations and bias.

7. Pastoral Land Tenure

The term 'pastoralism' denotes a way of life and social organization based on livestock raising as the primary economic activity. It is suited to the dry lands and has been adapted from generation to generation. Pastoralism has survived as a livelihood and land use system despite deliberate efforts from successive Governments to replace it with other land use systems. This tenacity of pastoralism testifies to its appropriateness

to the dry lands. As a productive system, pastoralism depends on livestock and livestock products.

The problems of pastoral land tenure relations have their roots in the dispossession of pastoralist communities of their land and land based resources. The expropriation of high potential areas for natural forests and game reserves, poor infrastructure and services attests to this official neglect. Colonial and post-colonial land administration in the pastoralist areas led to the deprivation of land management rights from the traditional institutions thereby creating uncertainty on the access, control and exploitation of land based resources including grazing lands, water and salt licks among others.

The Land (Group Representatives) Act (Cap 283) was enacted to provide a framework of transition from customary pastoral land tenure to individual tenure in pastoral areas.

The diverse roles that women play in dry land areas and the special problems that lack of rights to land places in their way of performing those roles is recognized.

To secure pastoralists tenure to land, the Government shall:

- a) Institute alternative methods of registration of land for pastoral communities while allowing them to maintain their unique land use system and livelihoods;
 - b) Ensure that the rights of women in pastoral lands and landbased resources are recognized and protected;
 - c) Provide for flexible and negotiated cross boundary access among clans, groups and communities for mutual benefit to facilitate the migratory nature of pastoralism;
 - d) Ensure that all land uses and practices under pastoral tenure conform to the principles of sustainable resource management; and
 - e) Review the boundaries of reserved lands in pastoral areas to determine the current need.
- Community Ownership

3.4 Agriculture

Nairobi has very high potential for various agricultural enterprises in sectors such as crop production, and livestock farming. The soils and weather conditions are also favourable for agriculture.

Many of the food producers in Nairobi have their plots in a large open space across from the river and dam. This open space includes slopes ranging from gentle to moderate and

several soil types. If rainfall is adequate, there are two cropping seasons from October to December and April to July. Maize is generally grown during the long rains but some fast maturing varieties can be grown during the short rains. Beans are grown during both seasons. Aside from these two staples, sweet and Irish potatoes, kale, and cowpeas are common crops. Flood-prone areas are planted with cocoyam, bananas, and sugar cane. High value crops such as onion, tomato, and Swiss chard are rarely seen because they are well liked by thieves. A small number of producers irrigate their plots with sewage water. Within the settlement of Kariobangi, there are numerous chickens, ducks, and goats as well as some sheep and pigs. Animal production can be a challenge due to disease and theft.

Most of the producers involved in the study, had several plots of different sizes and with varying soil and slope characteristics. None of the producers had recognized legal rights to the land or its use. Most of the open-space land near Kariobangi was, until 1989, the property of the Kenyan Prison Authority. Much of this land has since been privatized. During fieldwork in 1994 it was found that several of the property owners had evicted producers without prior notice in order to make way for housing construction for middle-income earners. Fear of eviction is only one of the insecurities which Kariobangi food producers face. Others include crop losses due to theft, inadequate rainfall, disease or insect pests, and emergencies in the household.

Although the producers are considered squatters, the study revealed that most producers had been cultivating the same plots between 2 and 10 years on average. One informant had done so for 19 years. The producers who have started cultivating relatively recently tended to occupy the most marginal land, unless they had obtained a plot through a relative or chosen to cultivate in another part of Nairobi

3.5 Industry

Industry accounted for 13% of GDP in 2000. Although Kenya's manufacturing industries are small, they are the most sophisticated in East Africa. The manufacturing sector has been growing since the late 1990s and into the new century. The manufactures Kenya

produces are relatively diverse. The transformation of agricultural raw materials, particularly of coffee and tea, remains the principal industrial activity. Meat and fruit canning, wheat flour and cornmeal milling, and sugar refining are also important. Electronics production, vehicle assembly, publishing, and soda ash processing are all significant parts of the sector. Assembly of computer components began in 1987. Kenya also manufactures chemicals, textiles, ceramics, shoes, beer and soft drinks, cigarettes, soap, machinery, metal products, batteries, plastics, cement, aluminum, steel, glass, rubber, wood, cork, furniture, and leather goods. It also produces a small number of trucks and automobiles. One quarter of Kenya's industrial sector is owned by UK investors; American investors are the next largest group.

3.6 Research design

The research employed a number of methods that are relevant to environment and community studies. A qualitative survey research strategy was undertaken and it broadly used a cross-sectional study to gather evidence from multiple sources. The advantage of using a cross-sectional study was that data was gathered from a large number of people and the data are comparable, since they aren't affected by changes over time (Bailey, 1994). The methods of collecting data included In-depth qualitative interviews with key respondents, observation, semi structured questionnaires, Participatory Rural Appraisal (PRA) and Focus Group Discussions (FGDs).

3.7 Pilot Study Phase

This phase involved visiting selected urban settlements in Nairobi city. The overall purpose of the pilot study was to provide a broad picture of issues relating to environmental management. The pilot study phase identified Kariobangi north and Kariobangi south in Nairobi city as the best probable study areas due to their level of environmental degradation.

The specific units chosen for the study included selected households within informal settlement sites in Nairobi city. Other units studied were Community Based Groups and

Organizations (CBGs and CBOs).

3.8 Selection of study sites and unit identification

Selection of study sites in Nairobi city was based on the rationale that visibility and concentration of ecological impacts of human settlements and activities, tend to be higher in densely than sparsely populated areas (NEMA. 2000).

The selection of Kariobangi informal settlements was thus based on the criteria of the density of human population and the nature of character of the environment and social economic activities associated with the community.

3.9 Sampling procedure and sample size

The sampling frame consisted of a list of all individuals and community groups and organizations from the study sites. The lists were obtained from the local councils. Community membership lists were obtained from community groups.

Non-probability sampling techniques were then employed to identify sites and individual groups or elements included in the study. Peil (1982) has affirmed the relevance of purposive samples for community or case studies. In this case, Quota and Purposive samples were drawn from the respective sites and unit sample frames.

- Purposive/ Judgmental sampling was used to select CBOs, CBGs and their leaders, public officers/ local leaders and non-members to community based organizations within the informal settlements.
- Snow ball sampling was conducted in stages. In the first stage, a few persons having the requisite characteristics were identified and interviewed. These were then used as informants to identify others who qualified for inclusion in the sample. The second stage involved interviewing these persons who in turn led to still more persons who could be interviewed in the third stage, and so on.

3.10 Sample size

The informal settlements in Kariobangi were stratified into two subdivisions, that is; Kariobangi north and Kariobangi south in all, a proportionate sample size of 60 households was selected for the study to generate quantitative statistics.

3.11 Data collection methods

This research being an 'Explanatory study' which attempted to explain social phenomena by specifying 'why or how' things happened meant employing a combination of instruments and techniques.

- **Observation method:** This technique was used in collecting data on non-verbal behaviour. The observations were conducted as a preliminary to the survey. The type of observation carried out was one in which the researcher was a 'non participant' and didn't participate in group activities under study nor let pretend to be a member. It was a useful tool for studying private behaviour that individuals were not ready to admit to in the surveys. Observations were conducted with the help of a predetermined observation checklist.
- **Questionnaires and In-depth interview schedules:** These were used with the aim of obtaining both quantitative and qualitative data on environment conservation initiatives within the selected sites. Questionnaires were physically delivered to the respondents. Semi-structured questionnaires were assigned to individuals of different households, while in-depth interview schedules were for the key informants heading the different groups and organizations, and other public officers/ leaders relevant to the study.
- **Focus Group Discussions (FGDs):** Ward et al. (1991) define focus group discussions as guided discussions designed to provide information on a certain topic from a certain population. The group is generally homogeneous, although the design could require the use of different subgroups within a population. People or groups who could significantly generate qualitative data on the study sub- themes were interviewed.

The method was mainly used in gender sensitive areas and in instances where the researcher organized the community into groups or found already organized groups.

- Participatory Rural Appraisal (PRA): This method was used to collect data on identification of the various community groups. It was useful in obtaining information on community practices as well as their socio economic characteristics. It was also used to obtain information on peoples' participation, attitudes, values and knowledge in relation to environmental conservation. The research employed a few of the PRA techniques. The techniques used for collecting spatial data were the transect walks, daily and seasonal calendars, gender analysis matrix, institutional analysis and community action plan. For temporal data, the tool used was the Historical Profile.

3.12 Data processing and analysis

Data from the field was edited by carefully looking through each completed questionnaire for incomplete answers or mis-understood questions. The data was then coded. Coding for computer analysis consisted of assigning a code number to each answer category so that answers could be easily stored in the computer. Two main approaches were then used to analyze the qualitative and quantitative data that was obtained.

A Thematic approach was used to organize and interpret qualitative data in reference to the research questions. Quantitative data assisted in generating frequencies of occurrences of phenomena based on sampling and statistical processing of data in order to explain the observed trends. Data was then presented in graphical and tabular forms. The SPSS computer software was used.

CHAPTER 4

4.0 RESULTS AND DISCUSSION

4.1 Persistent environmental issues in the informal settlements of Nairobi.

Slums are a contiguous settlement where the inhabitants are characterized as having inadequate housing and basic services (The Global Report on Human Settlements, 2003). A slum is not recognized and addressed by the public authorities as an integral or equal part of the city.

The report further characterizes them as areas which lack basic services, substandard housing, overcrowded, unhealthy living conditions, insecure tenure, and poverty exclusion and have minimum settlement size.

In one of the focused group discussions in kariobangi the following environmental issues were identified by the community;

- The problem of waste disposal
- Poor sanitation for example in an area called baba dogo.
- Deforestation due to use of fuel wood for mainly cooking.
- Underground water pollution due to human activities and industrial establishments.
- Health problems
- Nature of housing and security of tenure

These key concerns in kariobangi were further emphasized in the survey, and the findings obtained formed the core of the discussion below;

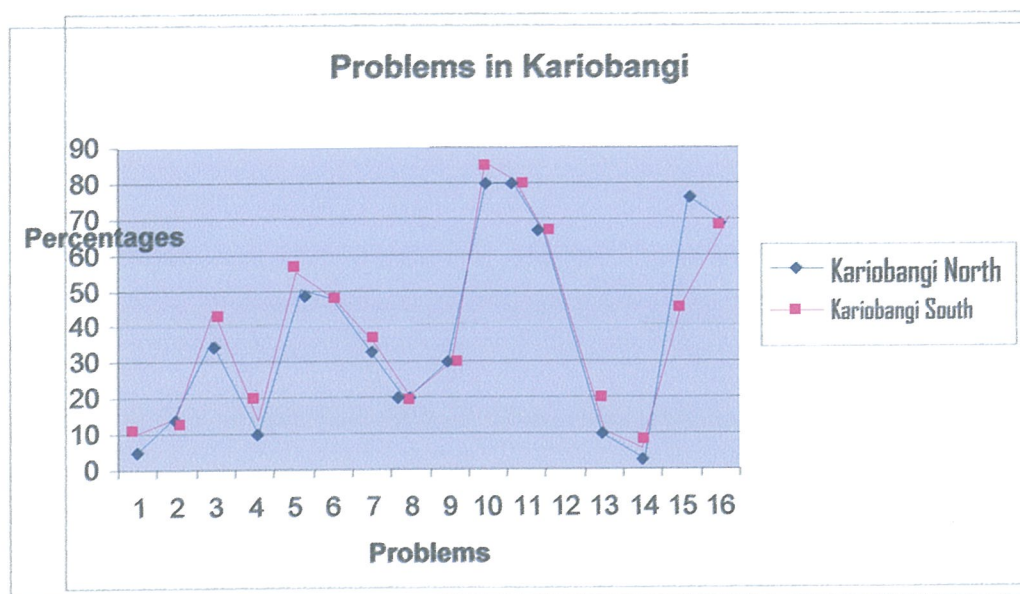


Fig 1: Major environmental problems affected by households at Kariobangi

Where problems are defined by; 1: difficult access to drinking water, 2: Poor quality of drinking water, 3: Inadequate disposal of human excreta, 4: flooding and inadequate drainage of storm water, 5: inadequate solid waste services, 6: Nuisance from waste disposal, 7: Presence of litter and illegal piles of waste, 8: poor access to public transport, 9: lack of fuel wood/ charcoal, 10: diseases, 11: lack of land for cultivation, 12: unproductive land, 13: accessibility to health services, 14: inadequate health services, 15: poor housing, 16: limited sources of income.

The major environmental problems experienced at kariobangi informal settlements are poor nature of housing and diseases (85%) respectively. Other problems in the area include inadequate solid waste services and the nuisance from solid waste disposal (50%).

NEMA (2001) notes that, rapid urbanization has led to urban sprawl and physical infrastructure deficiencies as well as depletion of natural resources and increased discharge of unprocessed wastes into the environment resulting in severe health problems. The main issues emphasized in the report concerning urban areas in kenya are proliferation of slums and unplanned settlements, water, sanitation and solid waste management. All of which concur with the study findings noted above.

Disease concern

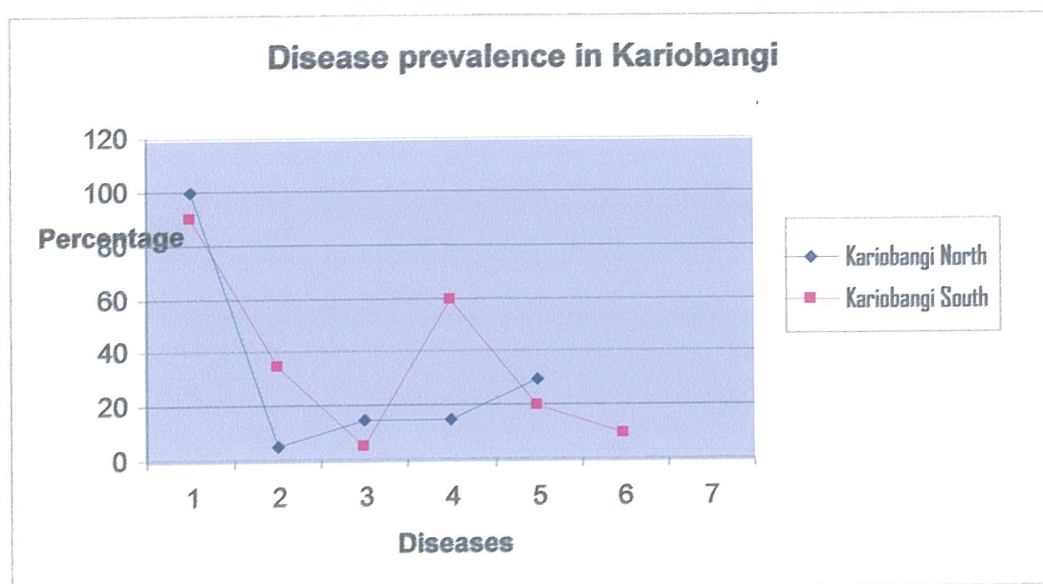


Fig 2: Disease prevalence at kariobangi

Where diseases are defined by: 1- Malaria, 2- Cough, 3- Wounds, 4- Diarrhea, 5- Skin diseases, 6- Measles, 7- AIDS

In all the two informal settlements, malaria is the most prevalent. The other being diarrhea, as in their order of importance. These findings are in agreement with those of the Ministry of Health, which emphasize that malaria is one of the most serious public health and environmental problem in the developing world and it is endemic in 102 countries including Kenya. It is the overall leading cause of death in the country, being responsible for 17.9% of all deaths in health units (MOH, 1997).

The Ministry of Health further notes that diarrhea is another leading cause of death in infants, with the highest rates in the 1-2 year age bracket. This is the time when they begin to crawl and walk and have a tendency to put many things in their mouths. Most diarrheas are caused by bacterial, viral and parasitic infestations transmitted through water, food and contact with fecal matter. Diarrhea is common in areas with low access

to safe water and sanitation. Kariobangi settlement experiences low levels of sanitation and is thus prone to such diseases.

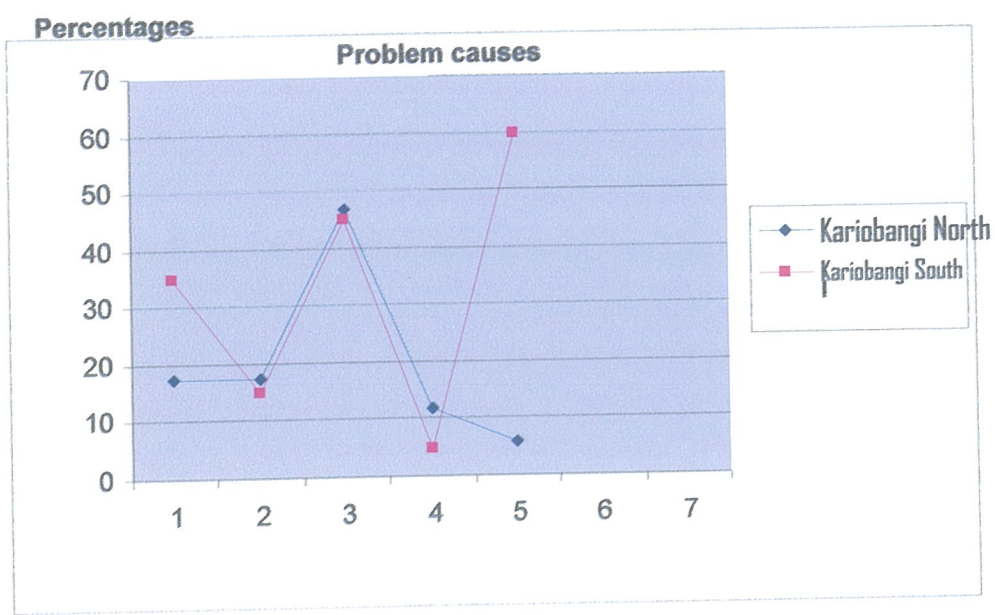


Fig 3: Causes of diseases in kariobangi

Where: 1- Ignorance, 2- I do not care attitude, 3- Inadequate facilities, 4- Poor sanitation, 5- Mainutrition, 6- Large families 7- I do not know

The leading causes cited for the prevalence of diseases are low levels of awareness, lack of adequate public health services and lack of resources at the household level (NEMA, 2001). This is similar to the study findings, though the study also illustrates other causes of diseases in the informal settlement as, having large families and malnutrition.

Housing concern

Housing is described as informal when it does not conform to the laws and regulatory frameworks setup in the city in which it occurs. Housing that does not conform to rules may do so in several ways including:

- Being built on land intended for another use (even though the building itself may conform to standards laid down in the regulations)
- not conforming to all of the standards laid down for that part of the city;
- not being subject to planning permission or building inspection (even though it may be eligible);
- being built on land not owned by the occupier and without permission of the owner
(The Global Report on human settlements, 2004)

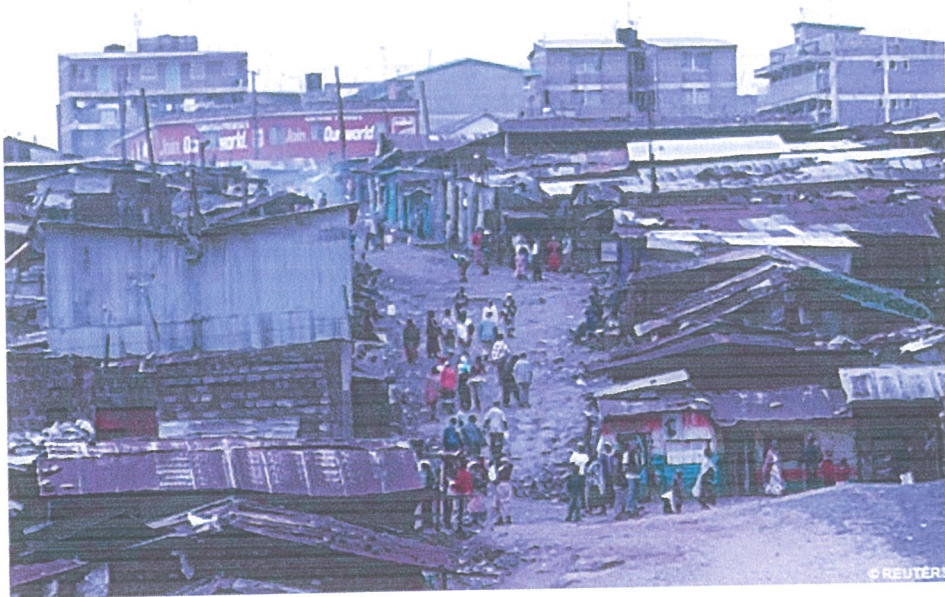


Plate 1: Nature of housing at kariobangi; notice the poor ventilation outlets and low lighting inlets due to congestion.

A house is considered to provide a sufficient living area for the household members if there are three or less people per room (The global report on human settlements, 2003).

Basing on the above categorization, housing in the Kariobangi informal settlement can be viewed as inadequate, since 85% of the people live in one roomed houses and they do share them with other families. Sharing of rooms with other families reduces as number of rooms one is entitled to increases. Room sharing with other families can result

into sanitation problems especially when the same families share facilities like toilets and bathing rooms. This creates a tendency of people to neglect maintenance of these facilities as is the case with 'common property right'. A household is considered to have access to sanitation if an excreta disposal system either in the form of a private or a public toilet is shared with a reasonable number of people. Households that share a public latrine with no more than one family are said to access sanitation facilities (Global report on human settlements, 2004). The Kariobangi community is characterized with 86% of the community sharing rooms as noted below:

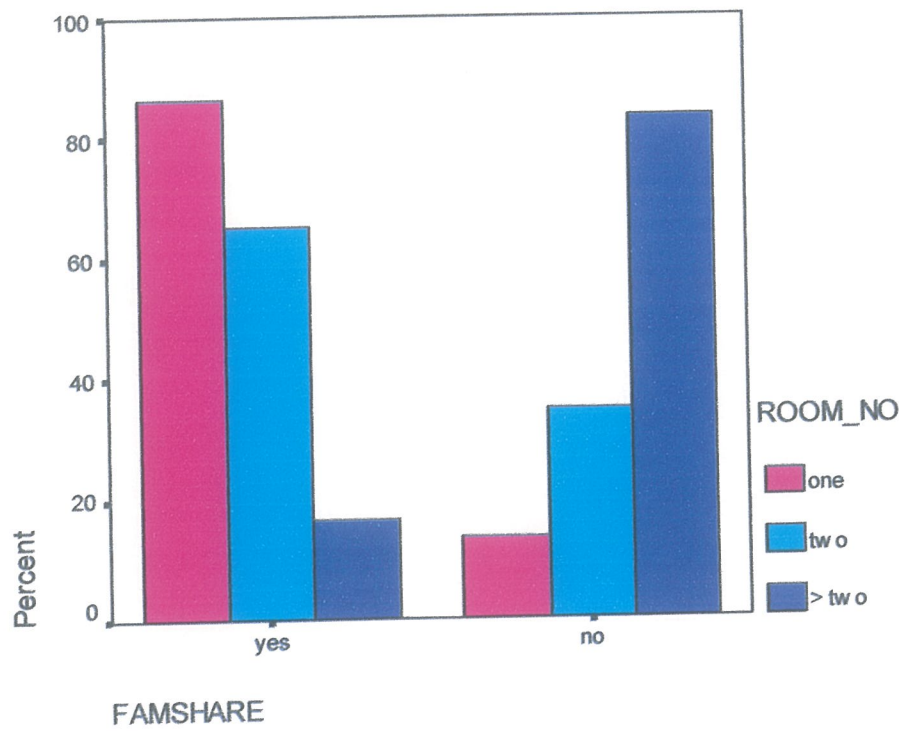


Fig 4: Room sharing in Kariobangi

Where: Famshare is about house sharing and room_no is the number of rooms found in the house.

Many common property regimes traditionally have involved the sustainable use of resources, but may break down due to over population, policy failures and the expropriation of resource ownership types (Pearce and Barbier, 2002). This is in line with

the Kariobangi community, whereby overcrowding has led to poor sanitation and related problems.

Table 1: Toilet sharing in Kariobangi

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	shared	45	78.9	86.5	86.5
	not shared	7	12.3	13.5	100.0
	Total	52	91.2	100.0	
Missing	System	5	8.8		
Total		57	100.0		

Table 2: Sanitary facilities available in homes at Kariobangi

		Frequency	%	Valid Percent	Cumulative Percent
Valid	Indoor bathing place	1	1.8	1.8	1.8
	Outdoor bathing place	10	17.5	17.5	19.3
	Toilet/ Pit latrine	4	7.0	7.0	26.3
	Outdoor bathing place/ Toilet/ Pit latrine	34	59.6	59.6	86.0
	Indoor bathing place/ Toilet/ Pit latrine	5	8.8	8.8	94.7
	Outdoor bathing place, Toilet/ Pit latrine and drying rack	2	3.5	3.5	98.2
	Indoor bathing place and Toilet/ Pit latrine and drying rack	1	1.8	1.8	100.0
	Total	57	100.0	100.0	

Source: Field findings, 2008

This community heavily depends on sharing facilities at home. Considering some of the basic sanitary facilities in a home, it is noted that 86% do share toilets. Other facilities shared include outdoor bathing places and pit latrines (59%). Facilities sharing can lead to poor sanitary conditions due to over utilization and in the end result into neglect of the facility in use.

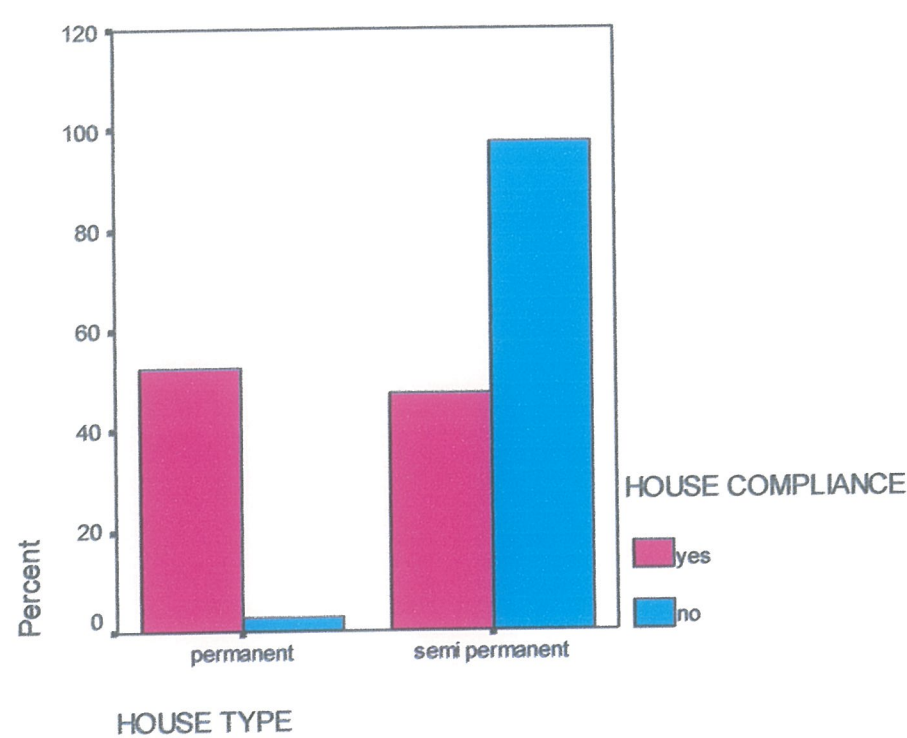


Fig 5: House compliance in Kariobangi

Comparative field statistics indicate that only 5% of the people inhabiting permanent structures believe that these structures do not comply with the local building code, compared to the 95% of those habiting semi permanent structures. In this particular community most of the people living in permanent structures are the owners. While those living in semi permanent structures are tenants. The 95% who are tenants feel the places they stay in don't comply with building standards.

House compliance to local building codes can be a source of insecurity and health risk exposure. In terms of insecurity, the inhabitants feel insecure and may therefore not be willing to engage in long term conservation programmes. Normally house building codes emphasize sanitary conditions that promote good health. Therefore failure to meet these building standards exposes the health of the occupants to health risks. For example living in poorly ventilated houses may result into exposure to respiratory infections.

Solid waste concern

Increasing urbanization, rising standards of living and rapid development associated with population growth has resulted in increased solid waste generation by industrial, domestic and other activities. Unfortunately, the increase in solid waste generation in almost all urban areas has not been accompanied by an equivalent increase in the capacity of the relevant urban authorities to deal with this environmental problem (NEMA, 1999).

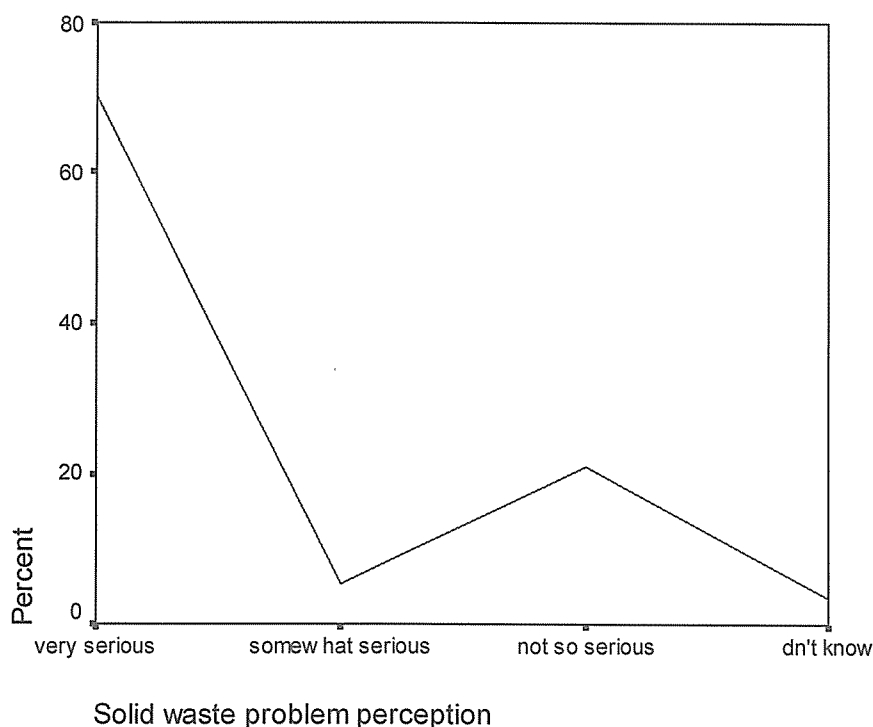


Fig 6: Solid waste problem in Kariobangi

The problem of solid waste in Kariobangi informal settlements is very serious. 70% of the affected people consider the problem to be very serious compared to 20% who do not consider the problem as being serious. This result is in agreement with the Global Report on Human Settlements (2003) which emphasizes that slum dwellers are most vulnerable in the process of solid waste management, as they suffer not only their own uncollected garbage, but often that of richer people dumped near their homes as well.

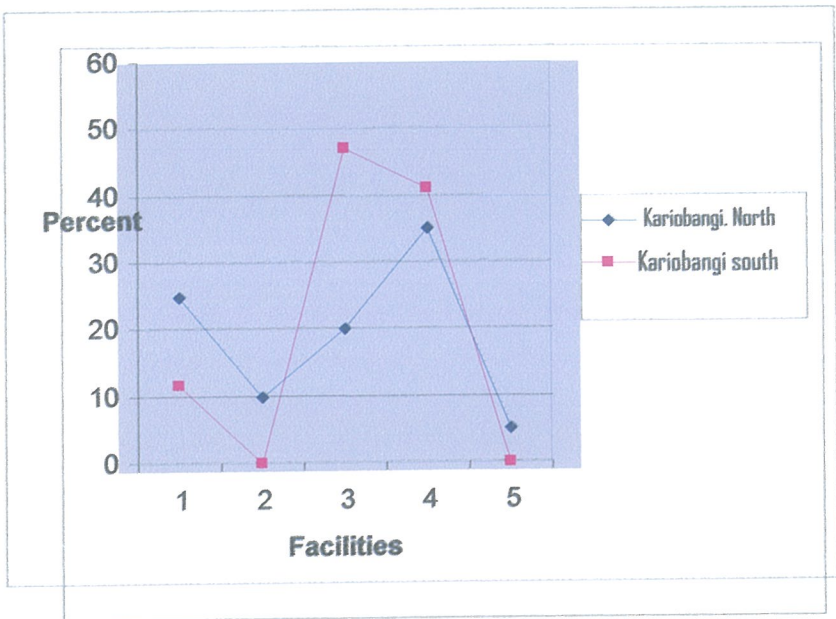


Fig 7: Facilities lacking in respective areas

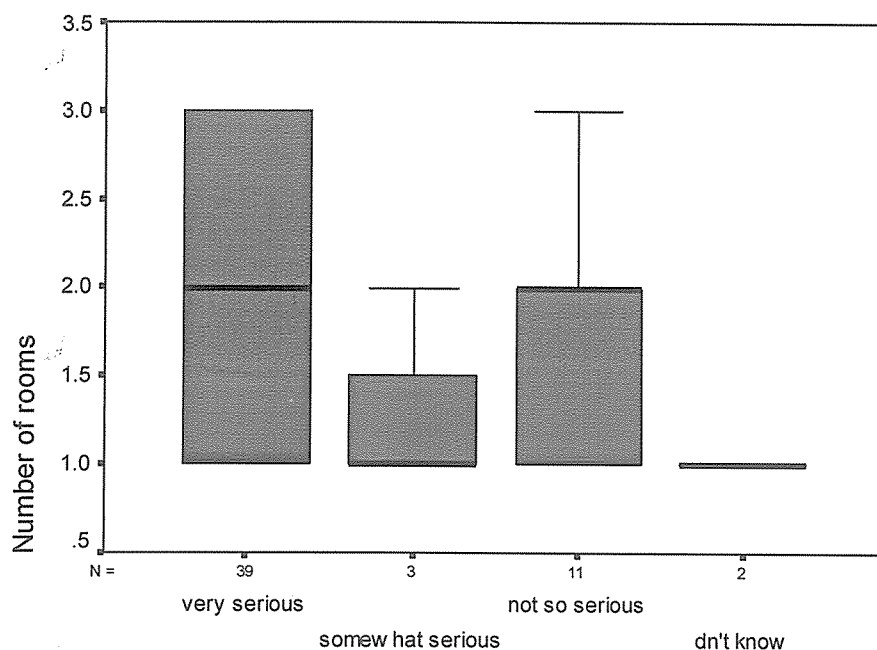
Where: 1- Health Center, 2- Safe water source, 3- Latrine, 4- Waste disposal site, 5- More schools

The problem of solid waste is further aggravated when consideration is given to facility availability in the community. Results show that 50% of the people in both Kariobangi north and south observe that the main facilities lacking in the area are the latrines. In Kariobangi south the lack of waste disposal facilities is severe (35%). In this settlement all the waste open dumping area is unattended to, and yet it is located near residential areas (Kariobangi south).from Nairobi municipal council is dumped here onto an open land fill.



Plate 2: Kenya, Nairobi kariobangi north, illegal brewing of ch'angaa, also called 'kill me quick'

The community in Kariobangi is deeply engaged in the brewing activity. This activity is mainly carried out in Kariobangi south. The main issue raised about this activity is the way they dispose of the residues. Pits are dug where these wastes are deposited all through out the community. If pits aren't used, then the wastes are channeled into the river where the activity is also common. The pits and the wastes in them are a very serious environment hazard. They scorch the vegetation around and the gases from them pollute the atmosphere with noxious fumes.



Solid waste problem

Fig 8: Number of rooms and the problem of solid waste

The problem of solid waste was considered very serious from people living in more than 2 roomed houses. The problem was not serious with people of two rooms and below. People living in more rooms perceive the problem to be very serious, since it can be noted that they are better off in terms of socio- economic status and they feel that services concerned with waste management are inadequate. The poor living in single rooms either don't know, or view the problem to be less severe. This is because of ignorance and 'I don't care' attitude noted in this community.

The study also established whether there was any relationship between house type and the intensity of the solid waste problem. The following was revealed:

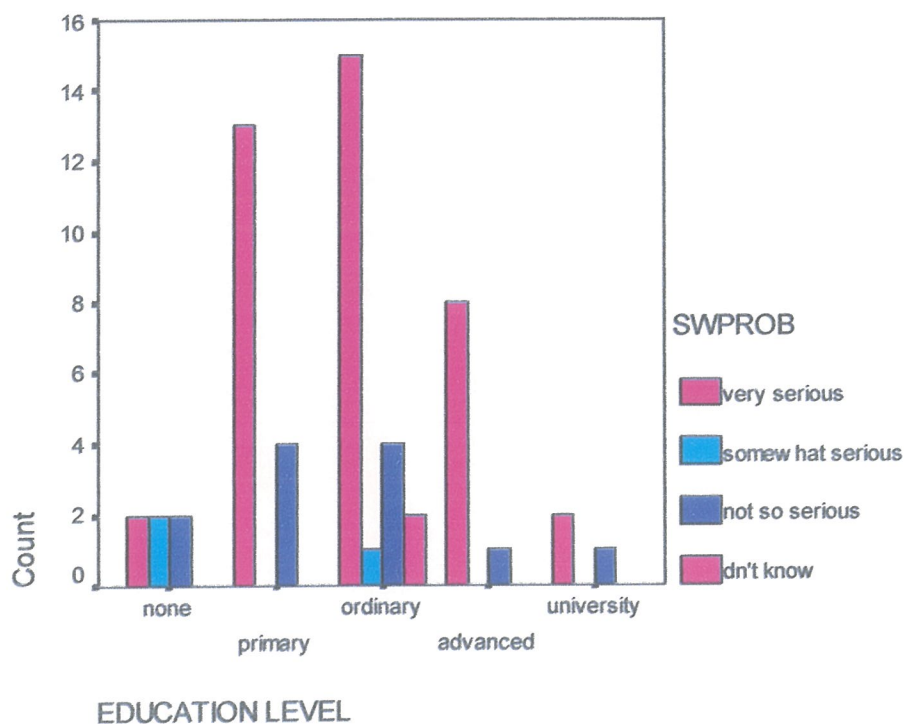


Fig 9: Comparisons between level of education and solid waste problem

The figure above illustrates that at all levels of education, solid waste problem is taken to be very serious in the Kariobangi community. However, the people who didn't attend school consider this problem of solid waste as insignificant.

The study established the nature of correlation between education level and the solid waste problem. The following was revealed:

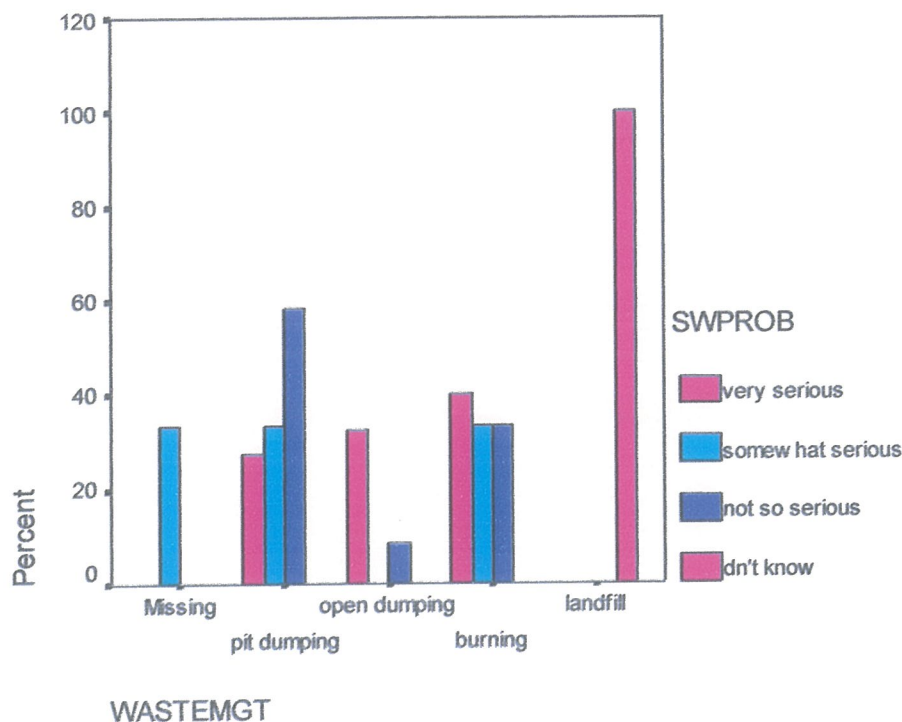


Fig 10: Intensity of solid waste problem and method of disposal

There is no established pattern in the way the community is finally disposing of its wastes. However, respondents that are not sure of how they dispose of their wastes form the majority and these most probably are responsible for the indiscriminate disposal of wastes, which has intensified the problem in the area. Those respondents that dump their wastes in pits do not consider them a serious problem.

Water concern

Water is one of the great necessities of human life. A supply of clean water is absolutely necessary for life and health. Many people of the world do not have access to clean water or can only obtain it at high prices in time and/or money (Global Report on Human Settlements, 2003).

People living in this community do not take water to be a serious problem. Water is a problem when one considers its accessibility, quantity and quality.

Basing on the Like scale, individuals were able to determine water adequacy and purity using self judgment. As regards adequacy 84.2% knew water for home use was enough and 8.8% plenty. In terms of purity 61.4% noted that the water they were using was clean and 36.8% very clean. In terms of accessibility, the community in Kariobangi, only has 2 stand pipes which require use of money to buy the water and these are meant to serve a community of about 8000 people (Chiefs Records). The rest of the community which cannot afford has to find alternatives like using surface water sources which are dirty.

However, since the community does not view water as a serious problem, their level of judgment can be debated when one considers findings from the transect matrix. The transect matrix identifies dirty surface water sources from which the community collects water.

Deforestation concern

The National Biomass study revealed that in areas with high population density, wood fuel harvesting was the main cause of deforestation (FD, 1993). The problem of excessive tree harvesting was noted when considering the piles of charcoal and firewood that enter this informal settlement from the islands that surround it. The study revealed the following as regards the type of fuel commonly used in the homes of the respondents.

Table 3: Fuel use type in Kariobangi

	Frequency		Percent	Valid Percent	Cumulative Percent
Valid	Firewood	5	8.8	9.1	9.1
	Charcoal	45	78.9	81.8	90.9
	paraffin	3	5.3	5.5	96.4
	other	2	3.5	3.6	100.0
	Total	55	96.5	100.0	
Missing	System	2	3.5		
Total		57	100.0		

Source: Field findings, 2007

The main source of energy used in the home is charcoal. This accounted for 81.8% while firewood was 9.1%. These findings are in agreement with FD (1993) which emphasizes the main source of energy for most rural settlements being fuel wood. Most of this energy is used for cooking at home. Excessive tree harvesting with minimal replacements is responsible for the observed rates of deforestation in the country.



Plate 3: Replanting of reclaimed area in Karura forest.

4.2 Nature and level of organization of community initiatives in managing

Environmental recovery in Kariobangi:

Slums are products of failed policies, bad governance, corruption, inappropriate regulation, dysfunctional land markets, unresponsive financial systems and a fundamental lack of political will. It is upon this background that understanding the nature and level of organization of community initiatives is paramount in solving issues that exist in different informal settlements (The global report on human settlements, 2003).

- **Group Initiatives in managing environmental recovery:**

Normally in good community planning, the members of a given community should be organized into groups for ease of planning (Damian and Becker, 2000). Broad public participation in decision making is an important element of Agenda 21 because, combined with greater accountability, it is basic to the concept of sustainable development. Agenda 21 devotes separate chapters to involving many different groups including women, children and youth, indigenous people, NGO's, local authorities among others. Public participation enables such knowledge, skills and resources to be mobilized and fully employed, and the effectiveness of Government initiatives to be increased (UNEP, 1999).

In Kenya, the right of the public to participate in environmental matters is enshrined in the constitution 1995; the various sectoral statutes; the NES 1995; and the Local Government Act 1997.

Table 4: Institutional analysis matrix for Kariobangi

Name of Institution	Location	Type	Scale of operation
1.umoja ni nguvu	Kariobangi North and Kariobangi South.	Loans, Revolving fund, Helps in times of trouble.	Through out community.
2.Tumaini association	Kariobangi North	Savings and credit	Local
3.Kariobangi drivers	Kariobangi North	Specific interest association	Local
4.Kariobangi transporters	Kariobangi North	Specific interest association	Local
5.Kariobangi South village association	Kariobangi South	Borrowers group	Local
6.Maendeleo ya wanawake association	Kariobangi South	Specific interest association	Local
7.Child Restoration Outreach(CRO)	Kariobangi South	Development association	National
8.Schools	Kariobangi North and South	Institutional	Local
9.Religious Institutions	Kariobangi North and South	Institutional	Local
10.local councils	Kariobangi North and South	Institutional	Local

Source: Field findings, 2007

From the institutional analysis matrix, the following observations can be made;

- Most of the community based groups are localized in their actions regarding the scale of operation.
- The most influential groups in the community are umoja ni nguvu which deals with Revolving funds and helps in times of trouble. This group can be a very important tool when dealing with this community on matters of environmental conservation, as it operates through out the Kariobangi informal settlement. Other equally influential groups at local level are: Kariobangi drivers, Tumaini association,

Maendeleo ya wanawake association, Kariobangi South village association, Kariobangi drivers, Child Restoration Outreach (CRO) and. Also schools and religious institutions are equally important.

- Most of these groups are specific interest groups which are formed to solve a given need or problem in the community. These types of associations normally expire when these issues or needs are solved. They can also be referred to as 'single issue' groups.
- The large number of saving and credit schemes in this community, portrays how urgent the issue of poverty needs to be addressed.

The strategy of group intervention in planning depends on one willingness to work as a group or preference to work individually. The study noted that 64.3% of the community prefers to work when organized into some form of groups. 23.8% of the community is willing to work on an individual basis when it comes to dealing with environmentally related issues.

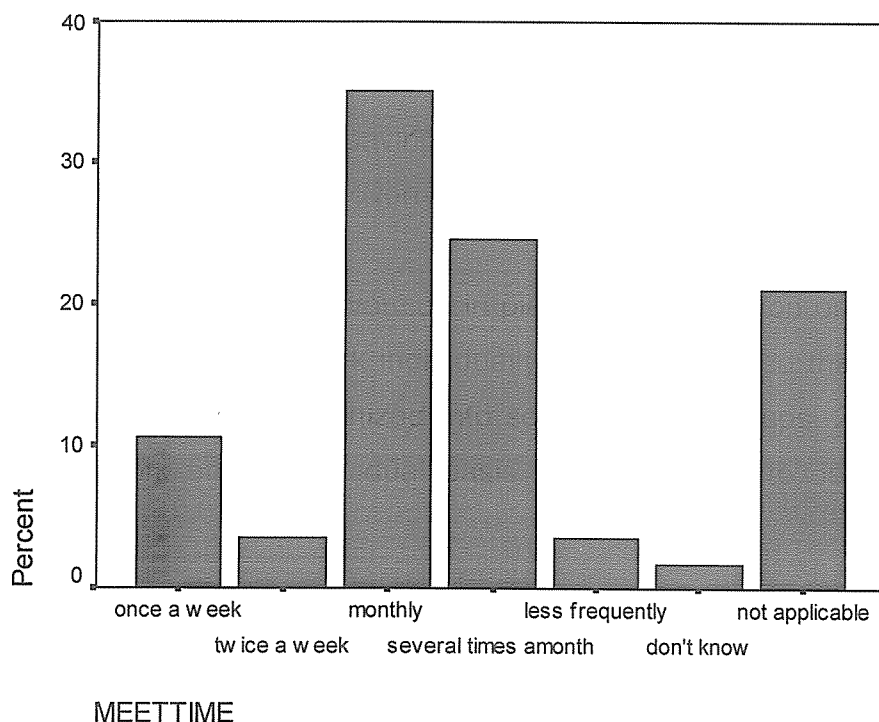


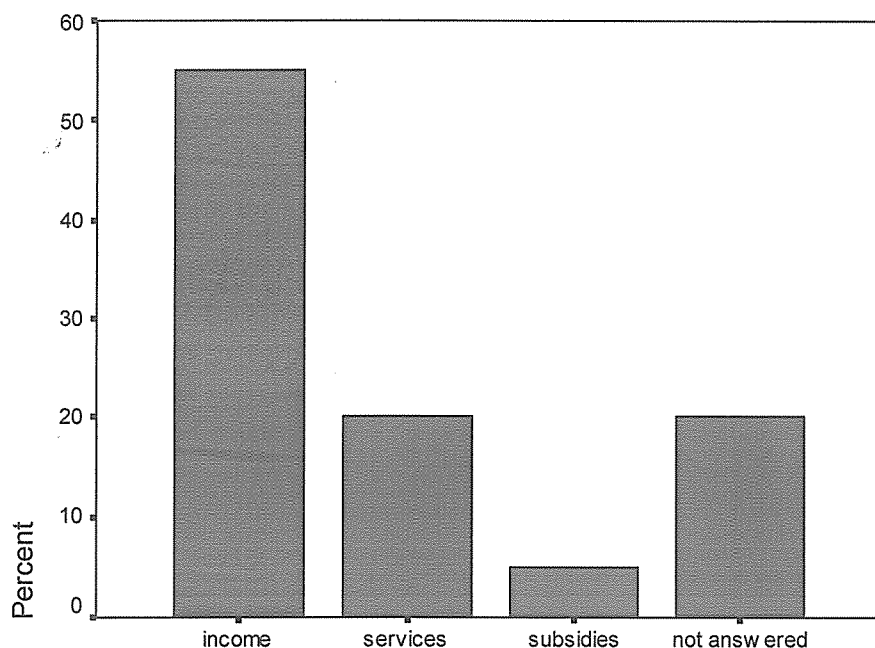
Fig 11: Meeting times for group members

Most of the groups in this community meet at least once a month 35%. Those groups that meet several times a month account for 25%. The 20% (not applicable) do not belong to any group. These findings illustrate that there is some level of organization in this community. Implementation of awareness campaigns can focus on the strategy of using these group meetings.

Appropriate time for group meetings is fundamental in running group activities. However, any meaningful intervention should focus on the time of activities the various group members are involved in. Inviting group meetings at a time when people are busy as in "Harvesting time" renders poor attendance. Therefore the study indulged in use of PRA tools which establish the temporal element in a community, and the findings were as noted below:

Daily calendar for Kariobangi (attached as appendices)

The daily calendar for Kariobangi revealed the following about this informal community; the community is very busy during day time. Most of the people are dealing in petty business and activities revolving around jua kali. The community is also heavily engaged in brewing. Any meaningful intervention in transforming this community should start from 4:00-7:00pm, when these people are free.



Benefits of being in groups

Fig 12: Benefits derived from groups

The community in Kariobangi prefers to organize themselves into groups because of the benefits accrued from them. 55% of the respondents derive income while 20% services. Those who are trying to improve on their incomes are quite many. This finding is supported by the large number of savings and credit groups noted in the institutional analysis matrix. It also explains the rampant poverty in the area. The services derived from these groups include comforting during times of trouble and also taking care of other disadvantaged groups in the community.

These findings are in line with Kibera and kariokoo (1999), who observe that there are many different types of organizations established by people themselves without outside influence. These groups are formed to respond to various needs like transporting the sick to health units and their membership is compulsory. Other examples forwarded are the burial groups, noted to be true community based organizations. These don't only serve during burial but also function as rural banks. Members have to conform to rules and regulations of the group. They note that there is transparency and accountability in

these groups. Despite these groups being functional and managed by communities themselves, they have so far been neglected by most players working for community involvement in health.

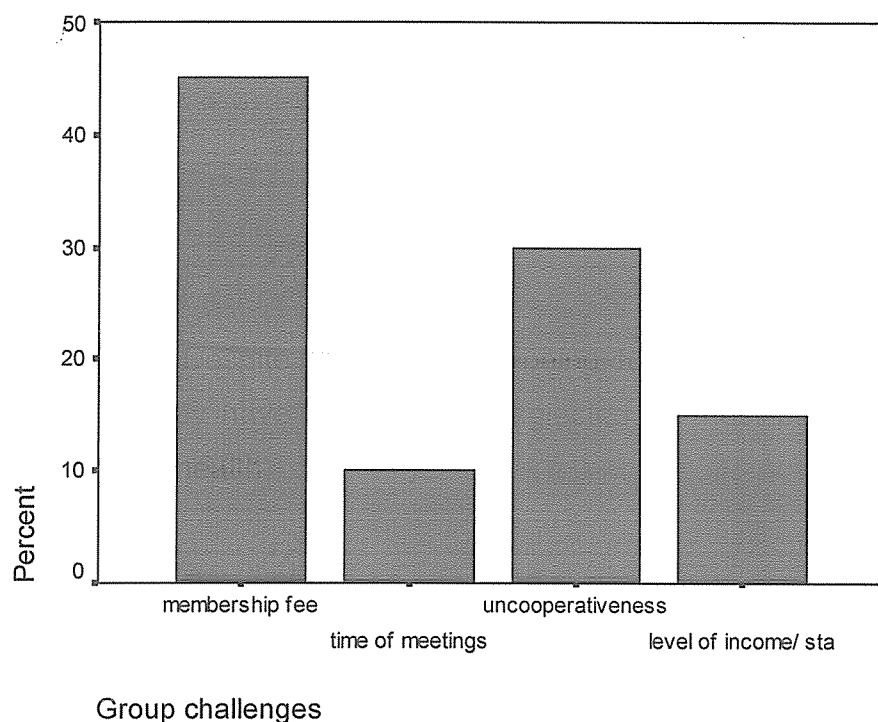


Fig 13: Challenges of community groups in Kariobangi

Community groups can be a good staging ground for building partnerships within the community. The problem is that these groups normally face a number of challenges. The Kariobangi community groups faced challenges like membership fee 45%, uncooperativeness 30% and level of income/ status in a community 15%. Inappropriate time of meetings accounted for the least 10%. These impediments to community development should be the focal point when interacting with this community.

Communal efforts in managing the environment Kariobangi

In addition to individual and household strategies for livelihood management, collective social action is a key characteristic of poor communities, whether regular or sporadic in the management of environmental resources. To make such cooperative social action effective and sustainable, an organizational base is often essential, with a leadership that is sufficiently accountable and earns the respect of its members (Global Report on Human Settlements, 2003).

• Institutional Initiatives:

Kariobangi informal settlement has a number of institutions like the schools, industries and the research institutions like KEFRI which works in collaboration with NEMA. Efforts of these institutions dwell on sustainable management and conservation of biodiversity and prevention of pollution.

The study also established Institutional initiatives from the interviews held with key informants. The environment officer of Nairobi city identified the Local Government Development programme (LGDP), as a good initiative in managing environmental recovery. He however noted that, this programme largely fails due to community members in the local areas failing to realize their contribution to the cause.

In place, are also local committees held with the responsibility of managing the environment. Kariobangi has sanitary committees and a secretary for environment and production at local district officer, whose role is to manage matters regarding the environment and health issues.

Other initiatives involve localized sensitization, as is the case with the concerned government departments like Forest and Environmental departments. These initiatives too are limited due to lack of people at the grassroots' to implement or enforce the legislated actions.

Cultural and religious institutions are important sources of community organization and mobilization. Initiatives by these two have been hampered by the heterogeneity nature of

these communities. The Assistant director of KEFRI, attributes failure of initiatives to communities not listening and the limited time they have due the nature of their work.

- **Non governmental initiatives**

NGOs that work directly with organizations of poor men and women conduct a range of tasks, from direct service provision to capacity building for CBOs, to acting as a go between to the outside world. They also encourage CBOs to form networks, as well as provide technical innovations.

The NGOs identified in Kariobangi community included action aid; a local NGO dealing mainly in the sensitization of the communities on issues of environmental conservation. Nairobi River Basin Programme is dealing in agriculturally related activities and also has adult literacy programmes. This NGO employs an effective tool in its sensitization which involves use of drama groups to spread its message to the community. Child Restoration Outreach (CRO) is another specialized NGO whose aim is to restore children from the streets into normal life. This is mainly operating in Kariobangi South.

It is worth noting that these NGOs are faced with challenges which have hindered their efforts in managing environmental conservation. A meeting held with the NGO leaders, identified some of these challenges as; competition among NGOs and CBOs as they vie for government grants and contracts which has reduced NGO solidarity and collaboration. Other challenges included 'brief case' organizations which need to prove their credentials and justify their actions. The limited action of these organizations is further justified as accountability is also problematic due to the nature of what CBOs and NGOs are trying to do, especially in relation to empowerment and democratization, which are hard to measure.

- **Self help initiatives:**

Existing self help initiatives in the Kariobangi community are in the form of individual efforts, whereby due to demand of water in the area, some people have come up with a business strategy of selling water to the rest of the community. These few innovative individuals have supplemented the limited public stand pipes.

Other individual initiatives in managing environment conservation and recovery are presented in the table below;

Practice	Percentage %
Solid waste collection	12.5
Clean neighborhood	25
Burn solid waste	10
Dig Pit latrines	5
Proper use of Latrines	5
Clean compound, collect solid waste, and burn solid waste	12.5
Plant trees, collect solid waste and clean neighborhood	12.5
Clean neighborhood and Burn solid waste	5
Clean neighborhood, Plant trees and dig Pit latrines	5

Table 14: Individual efforts in conserving the environment at Kariobangi

Source: Field findings, 2007

Individuals in this community are mainly practicing cleaning their neighbourhoods, collecting solid and burning solid waste. Normally self help initiatives revolve around community groups. However these efforts are limited, since most of the community groups have objectives which don't consider the environment as an important aspect in their activities. Most of the self help initiatives are 'self centered' and cannot do much to improve the environment of these informal settlements.

4.3 Factors that impede community initiatives in managing environmental recovery

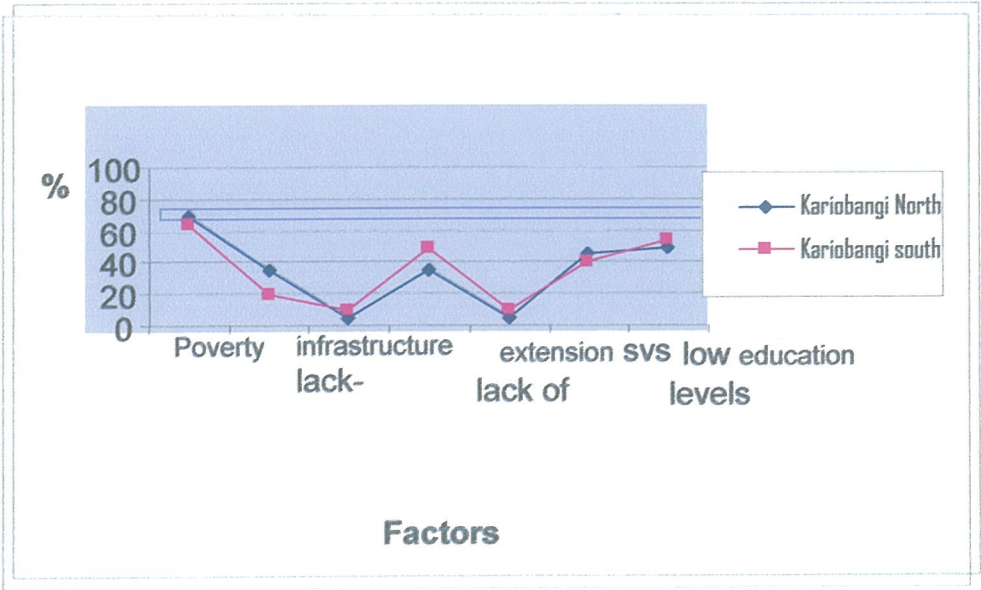


Fig 14: Environmental factors limiting conservation

• Poverty and low education levels

In the Kariobangi community the factors forwarded that impede community conservation efforts included poverty and low education levels (80%) respectively, and lack of infrastructure (70%). However, much as the community cites those factors, they may not be the underlying impediments to environmental conservation.

Pearce and Barbier (2000) note that; Poverty may not be a direct cause of environmental degradation, but instead may operate as a constraining factor on the ability of poor rural households to avoid land degradation or to invest in mitigating strategies. Empirical evidence suggests that poorer households in the developing regions are more constrained in their access to credit, inputs and research, and extension services necessary for investments in improved land and resource management. Also poverty

may severely constrain the ability of poor households to compete for resources, including high quality and productive land. Wealthier households generally take advantage of their superior political and market power to ensure initial access to better quality resources, while poorer households are confined to marginal land areas where resource rents are limited or where the resources are degraded.

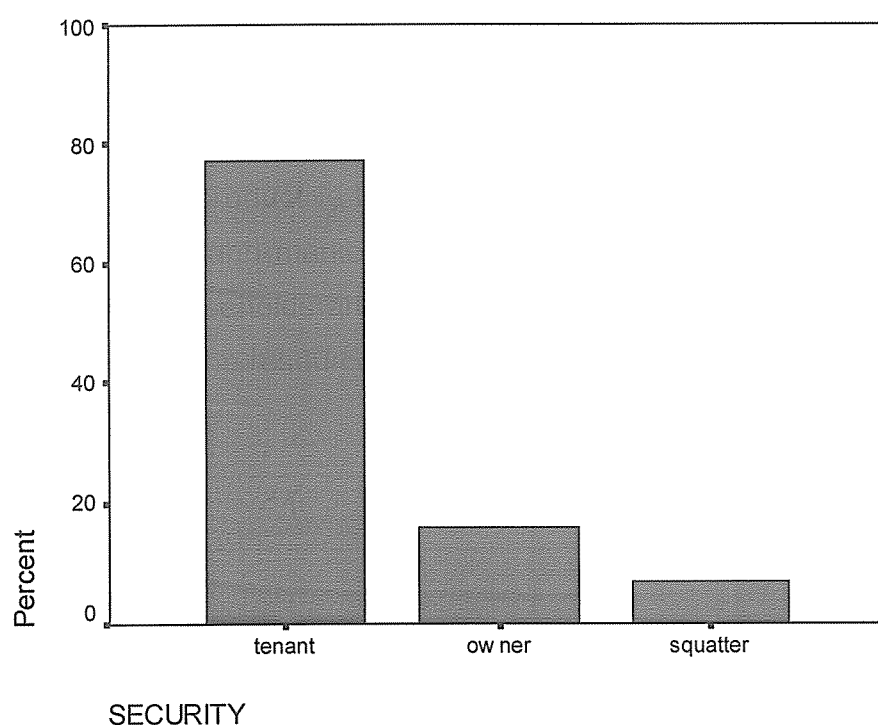


Fig 15: Tenureship type in Kariobangi

- **Tenureship type**

Tenure ship type is a very crucial factor in facilitating or impeding community initiatives. 75% of this community are tenants. This kind of tenure is insecure when one is dealing with medium or long term investments as is the case with most environmental projects. This observation is in line with Intal (1991) who argues that insecure property rights over land and natural resources

have discouraged efficient use of resources and private investment in long term improvements of land. The World Watch Institute also argues that 'poor but secure small holders rarely over burden their land; dispossessed and insecure rural households often have no choice but to do so'. People are more likely to deplete forests, soils and water supplies if they are concerned they will lose access to them.

On the other hand, Beder (1993) concludes that secure ownership of land has not always been necessary for sustainability. He notes that, commonly owned areas previously thrived under traditional management; but they have deteriorated because control has been moved from traditional management by local people to government institutions that have not developed adequate management mechanisms.

- **Weak organizational structures amongst NGOs, CBOs and the community**

To make cooperative social action effective and sustainable, an organizational base is often essential with a leadership that is sufficiently accountable and earns the respect of its members (Global Report on Human Settlements, 2003).

Interviews held with leaders of the various groups revealed that there were weak organizational structures in the community and the organizations in place. Indicators of weak structures in the grass root groups included:

- Low levels of interaction with other groups. Each CBG, CBO and NGO works independently in executing its duties. This lowers the effectiveness of community groups in achieving their objectives. There is need to organize horizontal networks among the various partners in environmental conservation within the community and Nation wide.
- Single issue community groups. Many CBOs and CBGs were formed to deal with specific needs or problems faced by the community. These single issue

organizations have high chances of fading out, once the need or problem they were formed for is dealt with.

- Issue of scale. The geographical coverage of NGOs and CBOs in Kariobangi is patchy and incomplete, leaving some slum settlements to fend for themselves, depending upon the self help strategies that their inhabitants can devise and on what the local government can provide.
- Competition among NGOs and CBOs as they strive to achieve funding of their respective activities has reduced NGO solidarity and collaboration.
- Accountability is also problematic due to the nature of what NGOs and CBOs are trying to do, especially in relation to empowerment and democratization, which are hard to measure.

- **Heterogeneity**

There is a tendency to over look heterogeneity in a community. Communities are stratified along lines of social class, ethnicity, gender, age and so on. Such inequalities are often apparent in both within and between CBOs and Development organizations. The community in Kariobangi consists of people of different ethnic backgrounds, age and so on. This too has impeded community initiatives in managing environment recovery.

Hultberg (1999) notes that" a village in Kenya is composed of different groups, which may be based on geographic origin, ethnic background or kinship. Age and gender may be important principles for strict distinctions within a village society. Variations in the economic basis of household sustenance lead to socio economic stratification. All such distinctions may be reflected in differences in power with regard to decision making and access to common resources. Furthermore, they are often reproduced in variations of values and may well lead to opposition of interests. The social reality of a differentiated village provides an important explanation for the occurrence of problems in introducing and sustaining health committees in the community from outside. The situation becomes

more problematic when several groups of committees are lumped together to form a parish development committee.”

• Diseases

In all the study sites, diseases were rampant. In Kariobangi I it was clearly stated that the area had a lot of orphans, whose parents had died due to different diseases. Diseases and low education levels can suppress initiatives aimed at improving the environment. This can be due to limited participation in good environmental practices as a result of disease. Treatment costs can also deter individuals from joining conservation efforts in the area. Especially when one considers the nature of work these people are involved in. Most of the people in the study area are operating small scale businesses as can be noted from the graphical illustration below:

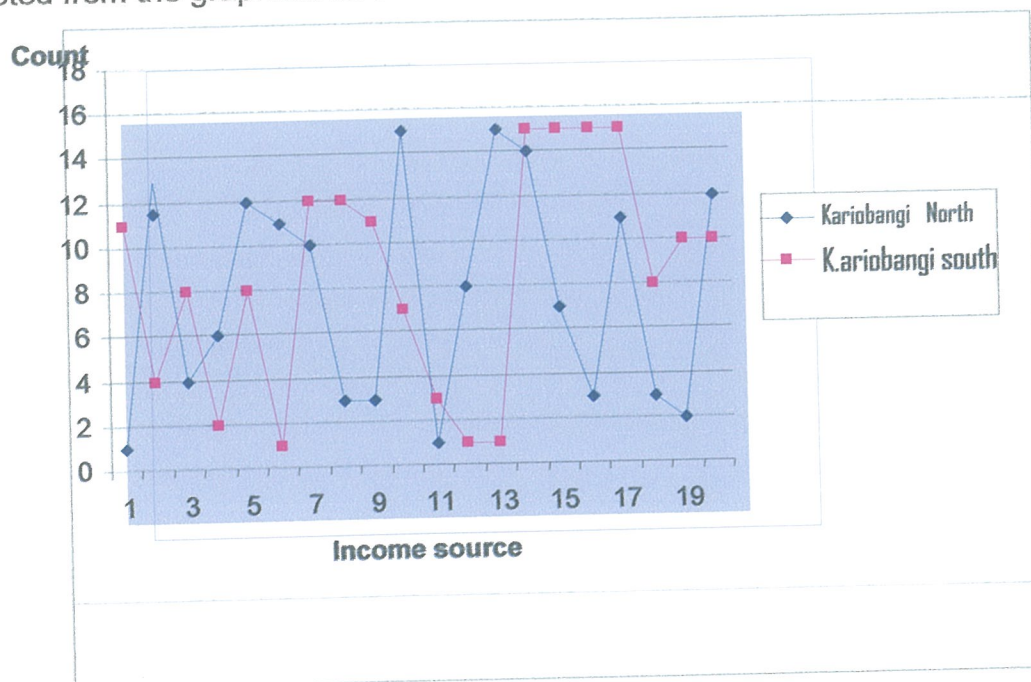


Fig 16: Income sources at Kariobangi

Where sources of income are defined by; 1: Sell of produce, 2: Retail shop, 3: prostitution 4: Repairing fishnets, 5: Boat making, 6: Carpentry, 7: Metal smith, 8:

Restaurant, 9: Sell crafts, 10: Bodaboda cyclist, 11: Casual laborer, 12: Sell local brew,
13: Cobbler, 14: baby sitting, 15: Animal rearing, 16: local herbs, 17: Salary earner, 18:
None

• Income sources in Kariobangi

The rampant poverty in this area may be due to the nature of work these people indulge in. The rate of creation of formal sector jobs is well below the expected growth rate of the urban labour force. Hence majority of people living in these informal settlements take on informal jobs for survival purposes. These jobs offer less in terms of savings, and considering the high dependency ratio in the study area, little investment can be done as regards conservation effort. One of the main income sources in this informal settlement is brewing.



Plate 5: Brewing is a major income source in Kariobangi

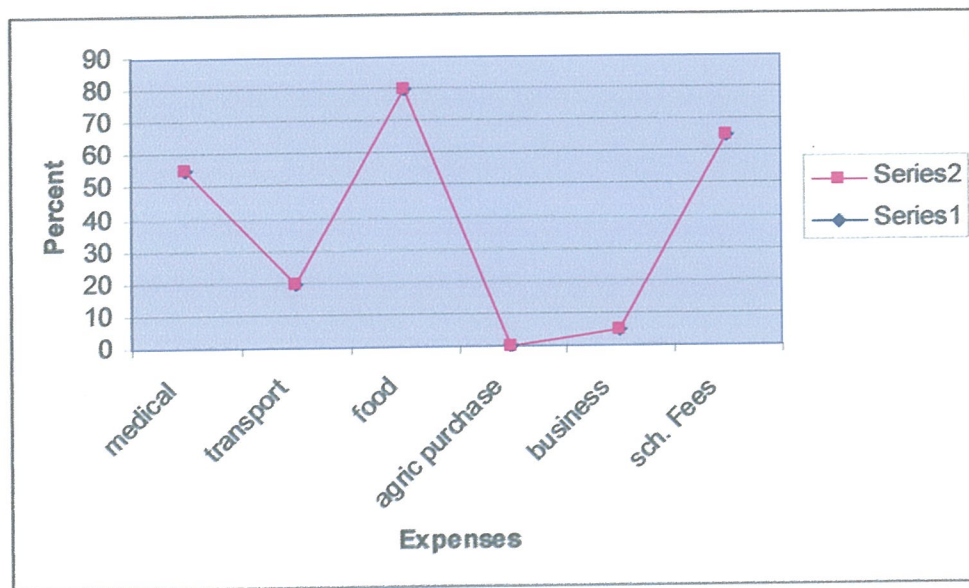


Fig 17: Expenses incurred by the community in Kariobangi

- **Expenditure**

Despite the low entrepreneurship in the community, these people spend a lot of money on food 80%, school fees 65% and Medicine 55%. Very little is spent on re-investing in business and agriculture which would have ensured sustainability in terms of production.

- **Dependency ratio**

The average number of dependants the people in Kariobangi have is 3 in each age bracket. The age bracket of 19-25 years has the least number of dependants in the community, with 3 children and below. The age category with the highest number of dependants is the 36-45 years bracket, which has dependants of 3-5 children. Such a high dependency ratio compared to the low income levels is also bound to affect development and conservation efforts in the community.

Interviews held with the following key informant revealed the following about the Kariobangi informal Settlements:

The municipal environment officer noted that, the environment problems were persistent in this area because of the following:

- Traditional life style of the people, culture of a personality models him/her. Diversity in culture has aggravated problems, since cooperation in the community is along ties of culture and other social structures.
- Land tenure system; 60% of municipal land is of the leasehold type. People have a tendency of capturing vacant land in the form of environmental zones and put it to use.
- Absence of people at the grass roots to implement or enforce enacted policies or laws.
- Marginalized communities: these being transient communities (on the move), the projects in the area haven't benefited the poor.
- Planning of the town was on a discriminatory basis. It gazetted the town in terms of income status
- Lack of accessible routes in these areas to solid waste collection
- The new land law makes it hard to displace these people, since the developers have to compensate them
- Presence of brief case NGOs, Opportunistic CBOs and internal conflicts.

The physical planner in Nairobi land office observed the following:

- Women roles in planning are normally left out
- Concurs with the environment officer that settlement is along lines of income, that is, well planned areas are for high income earners, medium earners are in the central business district, while low income earners stay in the informal settlements of Kariobangi.
- Scarcity of land due to increasing population.

The Assistant District forest officer identified the following impediments to environmental conservation

- Lack of community groups dealing in forestry around Kariobangi.

The chief in kariobangi sighted the following impediments to environmental conservation

- Lack of sensitization and in instances where it is done, it never gets to the grass roots
- No stiff measures in place to protect the Nairobi river. For example, bye laws are in place but decay begins with the brains.
- People lack job security and the work they do, doesn't satisfy their needs.

The agricultural and environment officers-Kasarani division, associate continued environmental degradation to:

- Poverty and unemployment, the majority of people in this community work for Indians in industries, who in turn pay peanuts for their services
- Bye laws are in place but in some instances, politicians have intervened and given out land where it's not allowed.

The Local council in kariobangi asserts that in his area of jurisdiction, there is no awareness creation. There is Insecurity of land tenure, since the municipal council is looking for property developers in this area. He portrays the image that limited land in this area has limited activities like tree planting. He summarizes it all by emphasizing lack of sanitation committees in his area.

A meeting held in Kariobangi concurred with what earlier interviews had revealed. It observed land tenure type; whereby the municipal council cannot allow anyone to construct permanent structures. It also emphasized lack of job security, lack of access to credit facilities, as these communities have no securities to loans and they also note presence of a lot of orphans due to diseases.

4.4: Factors that have facilitated community initiatives in managing environmental recovery

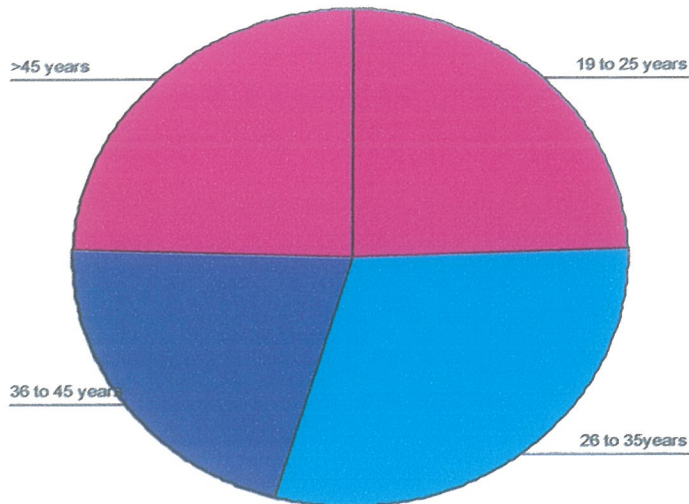


Fig 18: Age groups of the respondents in the informal settlements:

Majority of the respondents are in the middle aged bracket. This age bracket is still very active and can initiate developmental strategies. The same age group is still receptive to innovations and it can implement conservation efforts. However, it too is limited when awareness levels are judged.

The other factors that can influence conservation efforts in the study area include: Presence of policies which can direct conservation. Such laws include the wetland law, which is already in place. It is strengthened with the presence of a wetland custodian who foresees wetland management in the district. Also other bye laws are in place, but these too may be limited by the few numbers of enforcement officers in the various fields.

The district also provides funds to different sectors for sensitization and implementation of conservation activities. such as effort through the tree planting campaign that was supported by the communities and the government. Tree seedlings are now on high demand and the main tree nursery is established at Karura forest.

Communities are organized into groups and those who are not; the greatest percentage is willing to work in groups. These groups only need to be sensitized on issues related to the environment. One of the leading community groups is the Nairobi river project which is in charge of managing Nairobi river in kariobangi area.

Apart from Kariobangi, the rest of the areas have sanitation committees, which if properly utilized can do a lot in enhancing hygiene in the informal settlements.

Accessibility to media; Most of the people in this community can access information through radio programmes. The only problem is that this information is most of the time not directed to environmental conservation and other issues relevant to community improvement.

CHAPTER 5

5.0 Conclusion and Recommendations:

5.1 Conclusion:

Kariobangi slum settlement is characterized with poverty, diseases, improper housing and unhygienic conditions which threaten human survival. These conditions are a result of the nature of jobs these people are engaged in, insecurity of land tenure and lack of basic infrastructure. Within the informal settlements, social ties exist. These impoverished households depend so much on these social ties for their survival. Unfortunately, most census and survey data sets fail to reveal intra household inequalities and how different households relate in the community. If any meaningful intervention aimed at improving the livelihoods of these people is to take place, emphasis should be put on households as a social unit.

Communities are heterogeneous in nature. They are stratified along lines of social class, ethnicity, gender, sexual orientation, age, caste, religion and cultural tradition. This study established that inequalities exist within the CBOs and other organizations formed in this community. Most of the community organizations are formed to solve single issues that affect a given strata of the community. It is worth noting that the concerns in Kariobangi informal settlements do not revolve on environmental issues, but rather on eradicating the rampant poverty in this area.

5.2 Recommendations:

A basic function of all households in a community is to manage their resources and assets in order to maintain and reproduce the household as a social unit. In slums, where service provision by the state and non state actors is often very limited, and where residents are subject to daily deprivations of poverty, the critical issue is how the given household manages its labour, time and energy. The capacity of a poor household to

manage its financial and material assets, to improve its immediate environment and enhance opportunities of its individual members can be markedly improved if relations outside the household are established.

In addition to individual and household strategies for livelihood management, collective social action is a key characteristic of poor communities, whether on a regular or sporadic basis. To make such cooperative social action effective and sustainable, an organization base is often essential, with a leadership that is sufficiently accountable and earns the respect of its members. Since most of the Community groups in Kariobangi are meant to solve immediate concerns of this community, it is better for such organizations to diversify their demands and activities and to also widen their membership base.

Community action planning (CAP) is a pre-requisite in environmental management. However, the study established that the community in Kariobangi has not been consulted by the different partners in environmental management and in the few instances where it was done, the communities didn't understand their role. Involving the community in all levels of planning is essential for successful participation of the individuals in good environmental practices. In future, it is important that community input is considered. This observation has led to the failure of many projects in the area.

Considering the nature of linkages between the various partners in conservation, there is a low level of interaction amongst them. Each group in the community is independent of the other. Based on this observation, it is better for the various groups to form partnerships that unite them. This can be achieved through formulating objectives that cut across the divisions in the society. Building partnerships with the community to ensure wise resource use and management must focus on use of techniques that allow individuals of a community to participate in environmental conservation and planning. Techniques like making use of stake holder group meetings, public hearings, Focus groups, can highly improve relations with co-developers.

The issue of insecurity of tenure ship is paramount in all the informal settlements in this study. The majority of the residents are tenants who occupy these areas for a limited time to solve specific problems in their life time. Issues concerning their neighborhood are not a priority to them unless they directly affect them. The limited stay in these areas also affects the nature of relationships that exist in this community. Duration of stay affects the ties among the various households. The revised land bill is meant to empower such disadvantaged communities. Once there is security of tenure, people living in these areas can start construction of permanent structures with adequate facilities. This initiative can build stronger social ties within the community which will ensure a progressive community that can improve their living conditions.

Gender roles are pivotal in empowering a community. Women and their children play many roles that ensure the day to day survival of their homesteads. For example, the women in this community are heavily involved in the brewing activity, neglecting women and the roles they play in the survival and sustenance of their families is calling for project failure. Projects that focus on roles of the disadvantaged groups in this community are bound to improve their family living conditions and immediate surroundings.

Government policies on sustainable development are influenced by various lobby groups and the perception that politicians have about how these policies will affect their re-election chances. Normally in between elections, many competing interest groups lobby the government to have their views and policies adopted. If these interest groups are able to muster enough public support for their cause, this will help convince politicians that appropriate action should be taken to appease the community. The community in Kariobangi should thus focus on establishing strong advocacy and lobby groups that can strive for their cause during appropriate times.

Economic rationalists argue that people are more likely to take care of what they own; therefore commonly owned goods would be better looked after if they were in private hands. The few facilities in this community are commonly owned. Empowering such a

community so that they can start acquiring privately owned goods can therefore bring about the desired action of environmental improvement.

Provision of the relevant equipment and infrastructure like garbage skips in addition to the accompanying services. Improvement of services like waste collection by the municipal council, and the establishment of better roads to access the community, will greatly improve the Kariobangi informal settlement.

The large quantities of wastes in this community can be turned into bio-fuel which can be used for cooking and lighting. These wastes especially in the form of molasses can also be turned into fertilizers. This venture can be very fruitful in improving the livelihoods of this community. Sensitization, especially on issues regarding environmental conservation can ensure success of this venture. Other issues to be addressed include family planning, to try and check the population growth in this community.

Over the years, solutions that attempt to make use of the labour and resources of slum dwellers, and which seek to preserve and involve communities have become the preferred solution to slum improvement. Assisted self build has been an acceptable form of slum intervention since colonial times. This idea is based on observations in Peru and takes a benevolent view of communities, particularly of participatory and humanistic management, as opposed to coercive administration.

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APPENDICES

Questionnaire

Survey questionnaire for assessing capacity of local communities to manage their environment.

Date of interview:

Area:

a) Identification

I would like to ask you some questions that would assist the local government in determining how to improve on environmental conservation in your neighborhood. I am interviewing a number of households and establishments in your neighborhood and so your input is considered very valuable to this survey. Let me first ask you a few questions to identify this house or establishment and you.

b) Nature and level of organization of the community

1. Security of tenure

a) Tenant b) Owner c) Squatter d) Other.....

2. Are there any community groups in this area?

a) Yes

b) No

3. Do you belong to any community group in particular? (Turn to Qn. 12 if no)

a) Yes b) No

4. How many groups do you belong to?

a) One b) Two c) more than two

5. What are the requirements of joining the group you belong to?

a) Membership fee b) Voluntary c) Others (specify)

6. How often do you meet as members of the group?

- a) Once a week
- b) Twice a week
- c) Monthly
- d) Several times a month
- e) Less frequently
- f) Don't know

7. How often do you carry out communal work?

- a) Once a week
- b) Twice a week
- c) Monthly
- d) Never
- e) Several times a month
- f) don't know

8. What facilitated you to join group?

- a) Friends
- b) Group objectives
- c) Facilitation
- d) Other.....

9. Do you prefer to work as a group or individual when cleaning your neighborhood?

(If answer is neither, go to Qn.10)

- a) Group
- b) Individual
- c) Neither

10. What benefits do you obtain from the groups you belong to?

(If more than two, rank them in order of benefit)

- a) Income
- b) Services
- c) Tax exemption
- d) Subsidies
- e) Others (specify)

11. What challenges do you face from the community group?

(If more than two, rank them in order of challenge)

- a) Membership fee

- b) Time of meetings
- c) Uncooperativeness
- d) Level of income/ status
- e) None
- f) Others (specify)

12. Why don't you belong to any community group? (Give reasons)

.....

.....

13. Why don't you want to work as a group?

.....

.....

14. What is the name(s) of the community group(s) you belong to?

.....

.....

15. What else have you done, or are doing to improve on the hygiene of the area?

- a)
- b)
- c)

(B) Major concerns

(For this question, present the list in a different order on a random basis to each respondent).

"I would like to show you a list of problems that might be faced by your household or establishment".

- a) Difficult access to drinking water
- b) Poor quality of drinking water
- c) Inadequate disposal of human excreta
- d) Flooding and inadequate drainage of storm water
- e) Inadequate solid waste service
- f) Nuisance from waste disposal
- g) Presence of litter and illegal piles of waste
- h) Poor access to public transport
- i) Lack of fuel wood / charcoal for cooking
- j) Diseases
- k) Lack of land for cultivation
- l) Unproductive land
- m) Accessibility to health services
- n) Inadequacy of health services
- o) Poor housing
- p) Limited sources of income
- q) Others (specify)

B.1 From the above list of problems, which do you consider the most serious problem for your household or establishment? (Rank accordingly say 1) c, 2) d,...)

B.2 In your opinion, what causes the problem you consider to be most serious?

- a) Ignorance
- b) I don't care attitude
- c) Inadequate facilities

- d) Poor sanitation
- e) Large families
- f) Ownership of land
- g) Others (specify)

B.4 What diseases do you mostly suffer from?

(If more than two, rank in order of severity)

- a) Malaria
- b) Cough
- c) Wounds
- d) Diarrhea
- e) Skin diseases
- f) Others (specify)

B.5 What is your source of water for domestic use?

- a) Bore hole
- b) Surface well
- c) Public stand pipe
- d) Spring well
- e) Other.....

B.6 How clean is the water?

- a) Very clean
- b) Clean
- c) Dirty
- d) Don't know

B.7 Is the water for your domestic use enough?

- a) Plenty
- b) Enough
- c) Little

B.8 In your opinion, how serious is the problem of solid waste in this area?

- a) Very serious
- b) Some what serious
- c) Not so serious
- d) Don't know

B.9 In your opinion, how serious is the problem of nuisance from solid waste Disposal or dumping in this area?

- a) Very serious
- b) Some what serious
- c) Not so serious
- d) Don't know

B.10 In your opinion, how clean is your place of residence?

- a) Very clean
- b) Clean
- c) Not so clean
- d) Dirty
- e) Don't know

B.11 In your opinion, how clean is your place of work?

- a) Very clean
- b) Clean
- c) Not so clean
- d) Dirty
- e) Don't know

B.12 How do you manage wastes at home?

- a) Pit dumping
- b) Open dumping

- c) Burning
- d) Landfill
- e) Others.....

(C) Existing Situation

C.1 What is your main source of income?

(If more than one, rank accordingly)

- a) Sell produce
- b) Retail shop
- c) Carpentry
- d) Metal smith
- e) Restaurant
- f) Sell crafts
- g) Boda boda cyclist
- h) Casual
- i) Sell local brew
- j) Cobbler
- k) None
- l) Others (specify)

C.2 What problem(s) do you face at your work place?

- a) Distance from home to work
- b) Segregation
- c) Others (specify).....

C.3 How long have you stayed in the area?

- a) Less than a year
- b) One year
- c) 1 to 5 years
- d) More than 5 years

C.4 What time of the day do you consider free time?

- a) 7 - 9 am
- b) 10 – 12 am
- c) 2 – 4 pm
- d) 5 -6 pm
- e) Others (specify)

C.5 On the items below, rank what you consider to be your greatest expenditure?

- a) Medical treatment
- b) Transport
- c) Food
- d) Agricultural purchase
- e) Business expenses
- f) School fees
- g) Others (specify)

C.6 What do you consider important that lacks in this area?

- a) Health center
- b) Safe water source
- c) Latrine
- d) Waste disposal site
- e) Others (specify)

C.7 How long is the distance from the health center to your residence?

- a) Less than 100m
- b) 500m
- c) At least 1km

C.8 From the list of facilities below what do you have at home?

- a) Indoor bathing place b) Out door bathing place c) Drying rack
- e) Toilet (pit latrine)

C.9 Is the toilet at home,

- a) Shared b) Not shared?

C.10 What is the nature of the house you stay in?

- a) Permanent b) Semi permanent

C.11 How many rooms do you stay in?

- a) One b) Two c) More than two

C.12 Is your house shared with another family?

- a) Yes b) No

C.13 If yes, how many families do you share with?

- a) One b) Two c) More than Two

C.14 What is the nature of fuel used at home for cooking?

- a) Firewood b) Charcoal c) Paraffin d) Others.....

C. 15 How many hours of the day, do you interact with people outside your family? a)

- Less than an hour b) One hour c) Two hours d) More than Two

D Factors and conditions that limit environmental conservation and recovery

D.1 In your opinion, what factors limit environmental conservation in this area?

- a) Poverty
- b) Family size
- c) Lack of infrastructure
- d) Diseases
- e) Lack of extension services
- f) Inadequate providers of extension services
- g) Low education levels
- h) Don't know
- i) Others (specify)

D.2 As an individual, how can you improve the environment?

- a) Regular clean up exercise

- b) Planting trees in homesteads
- c) Teach others about the environment
- d) Others (specify)

D.3 What would you want local institutions to help you about improving the Environment?

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D.4 Do you have daily access to

- a) Radio b) Newspapers c) Television d) Magazines

E Other information

We will soon be ending this interview. Before we do, I would like to ask some questions about you and your family (or members of your establishment).

E.1 What is your age? (in years)

- a) Less than 18
- b) 19 – 25
- c) 26 – 35
- d) 36 – 45
- e) Above 45

E.2 What is your highest level of education?

- a) None
- b) Primary school
- c) Ordinary level
- d) Advanced level
- e) University

f) Others (specify)

E.3 Level attained by most educated member of your family?

a) None

b) Primary school

c) Ordinary level

d) Advanced level

e) University

f) Others (specify)

E.4 Number of children at your household who are less than 18 years (Specify)

E.5 Number of people in your family contributing to household income (Specify)

E.6 Does the house you stay in comply to local building standards or Bye laws?

a) Yes b) No

E.7 What materials are used for,

a) Walls.....

b) Floors.....

c) Roof.....

E.8 Proportion of household residing near a hazardous site

a) Housing in geologically hazardous zone (landslide, flood areas)

b) Housing under Garbage Mountain

c) Housing in high industrial pollution zone

d) Housing under other unprotected, high risk zone (e.g. railroads, energy transmission lines)

I have greatly appreciated the time spent while responding to these questions.

INTERVIEW SCHEDULE

Interview schedule for community based organizations (C.B.Os), community based groups (C.B.Gs) and Non Governmental Organizations.

Date of Interview:

Name of Interviewee:

Area:

Questions on nature and level of organization of community initiatives in managing the environment

1) Name of establishment or organization

.....

2) Date of foundation.....

3) Type of organization (e.g. Registered C.B.O, NGO, etc)

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4) Number of members

5) Objectives of the organization

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6) Organization structure of the establishment

7) Area of operation in the study area

(E.g. zone level, village, parish, sub county, district, regional level)

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8) Activities carried out by the organization in the area of operation

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9) How does the establishment relate with other institutions

(E.g. areas of cooperation)

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10) What approach does this organization use when dealing with communities?

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11) In your opinion, how would you judge your level of success when dealing with

Communities?

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12) When do you carry out field operations (e.g. daily routine and seasonally)

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13) What is the average attendance of group activities/ meetings?

14) Does your group have any assets? If so what?

15) Does the group have any account?

16. What impediments do you encounter when executing duties as an organization?

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17. What factors limit environmental conservation and recovery in the community?

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18. What is the source of your group funds?

19. What are the future plans of this organization?

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20. What would you like the group to like in say 10 years?

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21. What strategy have you laid to achieve this vision?

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22. Is your group called for any workshop/ seminar? By who and how often?

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Thank you for the cooperation.