

MINISTRY OF HEALTH



Healthy Urbanization: "Optimizing the Impact of Social Determinants of Health on Exposed Populations in Urban Settings"

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*Report on*  
**A SITUATIONAL ANALYSIS ON SOCIAL  
DETERMINANTS OF HEALTH AND  
HEALTH INEQUITY IN  
NAKURU, KENYA**

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**REPORT ON A SITUATIONAL ANALYSIS ON SOCIAL DETERMINANTS OF HEALTH AND HEALTH INEQUITY IN NAKURU, KENYA**

**MINISTRY OF HEALTH AND MUNICIPAL COUNCIL OF NAKURU**  
with support from World Health Organization

## ACKNOWLEDGEMENT

I would like to thank all those who helped me in any way in order to achieve my objectives. I would like to particularly thank my research assistant and my right hand man, Mr. Nyakambi (Nakuru Municipality Public Health Officer) for all the dedication and hard work put towards achievement of my goals.

I would also like to thank His Worship the Mayor of Nakuru, Mr. Mithamo, the Nakuru Municipality town clerk Mr Leina, the Chief Public Health Officer, Nakuru Municipality, Mr Kimani, the Director of Environment, Nakuru Municipality, Mr, Kiarie, the Central Bureau of Statistics – Nakuru District, Mr. Mbuguah of the Nakuru Local Urban Observatory, the Nakuru Municipality Division Officer, Mr. Abdi and Nakuru Municipality Chiefs.

Last but not least, I thank all the residents of Nakuru town who participated in discussions about social determinants of health and aided the achievement of my objectives.

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## DEFINITION OF TERMS

**Health** – a state of complete physical, mental, and social wellbeing and not merely the absence of disease and infirmity (WHO, 1948)

**Healthy Urbanization** – the process of enabling people to gain greater control over their health and their determinants through good urban governance that creates equal social opportunities for health for all (WKC, 2005)

**Health equity** – absence of disparities in health or its social determinants that favour the social groups that are already more advantaged (WKC, 2005).

**Social determinants of Health** – both specific features of and pathways by which societal conditions affect health and which potentially can be altered by informed action (Marmot and Wilkinson, 1999).

## LIST OF ABBREVIATIONS

<b>CBO</b>	–	Community Based Organization
<b>CBS</b>	–	Central Bureau of Statistics
<b>JICA</b>	–	Japan International Cooperation Agency
<b>KWS</b>	–	Kenya Wildlife Service
<b>LUO</b>	–	Local Urban Observatory
<b>MCN</b>	–	Municipal Council of Nakuru
<b>MOH</b>	–	Ministry of Health
<b>NAWASSCO</b>	–	Nakuru Water & Sanitation Services Company Limited
<b>NEMP</b>	–	Nakuru Environmental Management Project
<b>NGO</b>	–	Non-governmental Organization
<b>WHO</b>	–	World Health Organization
<b>WKC</b>	–	WHO Kobe Centre

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## 1.0 INTRODUCTION

Many researchers have pointed out that urbanization has significant impacts on people's health; (Johannes et al, 2005; Otsu et al, 2004; Ramos et al, 2006; Richard & Marlene, 2005) particularly social and environmental factors have been recognized as significant in order to reduce health disparities (Freudenberg et al, 2005; Galea & Ahem, 2005).

Investment in health is essential for economic growth based on a productive workforce. To achieve this, growth must be accompanied by more equitable access to the benefits of development, as inequities have severe health consequences and pose an unacceptable threat to human wellbeing and security (WHO, 1995a).

The Ministry of Health has taken initiatives to promote people's health since independence, however, approaches targeting social and environmental factors are little known and the effects on the health of the population, particularly on the local level has not been clear.

It is said that everyone should be on the pathway to health, but there are many factors that can cause a person to leave the health pathway and start heading towards disease (Wood et al, 1998). It should be recognized that poverty and economic status play a very important role in dictating opportunities in employment and working conditions, educational level and access to quality health care.

In this paper, we will identify relevant social determinants of health for Nakuru Municipality and how those determinants are related to people's health. Relevant people's health status in Nakuru Municipality and key stakeholders for approaches to optimize the identified social determinants of health will be followed.

Although only a few factors have been addressed, many more afflict the health of Nakuru residents. These include tobacco abuse, alcohol and poverty-drugs cycle, mental health disorders, pollution, culture and belief systems and growing insecurity.

## 2.0 NAKURU TOWN BACKGROUND INFORMATION

### 2.1 GEOGRAPHICAL STRUCTURE

Nakuru town is the 4th largest town in Kenya. It is located 160 Km (100 miles) Northwest of the capital city of Nairobi.

Nakuru is located in the heart of Rift Valley lying between latitude 00 10' and 00 20' South and longitude 360 and 360 10' East at 1859 meters above sea level.

Located along the twin rail and road transport corridor from the city of Mombasa at the Indian Ocean to the Great Lakes region, Nakuru becomes a stopover point for both national and international flow of traffic.

Within its region, Nakuru is the headquarters of the Rift Valley Province and serves an administrative, industrial, commercial and service center for the surrounding rich agricultural hinterland. It is linked to other towns in the region by rail and road network. The diversity of geographical, ecological and landscape features, resulting from the volcanic and tectonic activities that accompanied the formation of the Rift Valley characterize the natural assets of the region served by Nakuru.

Locally, the town is the headquarters of Nakuru district and a principle town in the hierarchy of over 300 trade and service centers in the district. Good transport linkages facilitate a mutual exchange of goods and services between Nakuru and these centers. Apart from playing an administrative role, the town serves as the center for agro-based industrial and manufacturing activities for its immediate rich agricultural hinterland.

At the municipal level, it offers a variety of services and jobs for a resident population of over 500,000 within its boundaries and in the surrounding peri-urban areas. At this local level, the town is located in the midst of a concentration of geographical features that constitute the

Lake Nakuru catchment basin. These include the Menengai Crater to the North, the Bahati Highlands to the North-east, the Eburu Hills and Lake Nakuru to the South and the Mau Escarpment to the South-west.

The town covers an area of 290 Km sq. with Lake Nakuru National Park taking 188 Km sq. leaving 102 Km sq. to the town.

### 2.2 NATURAL STRUCTURE AND ENVIRONMENTALLY SENSITIVE AREAS

Being on the floor of the Great Rift Valley, Nakuru is situated in an area of loose volcanic soils, such that during the dry season the town is engulfed in whirlwinds of dust, giving its name (Nakuru means 'a place of dust' in the Maasai language). During the rainy season there are cases of earth subsiding resulting in huge trenches leading to loss of lives and property. The geology of the town primarily consists of young volcanic rocks. Localized faulting has and continues to be a significant occurrence within the town due to existence of two major fault lines.

The environmentally sensitive areas include:

- a) Menengai Crater Hill-top
- b) Menengai Crater slopes and other environmentally sensitive slopes (including Honey Moon Hill slopes, Hyrax Hill slopes, Sirricone Ridge slopes)
- c) Lake Nakuru basin, lower River Njoro channel and bottom of Menengai Crater

The main ecological features are the Menengai forest on the slopes of Menengai Crater and a variety of diverse flora and fauna found in Lake Nakuru National Park. Lake Nakuru is especially known as one of the largest bird sanctuaries in the world with the flamingo and pelican bird species worth mentioning. While the lake is a natural occurrence, the National Park (wildlife habitat) is a recent, deliberate creation by man. Another man-made ecological feature includes the boulevards lining up the town's major roads, constituting a green grid.





*Picture1: photograph showing land subsidence*

## **2.3 POPULATION STRUCTURE OF NAKURU MUNICIPALITY AREA**

There has been tremendous increase in its population (a growth rate of approximately 7% per annum) over the past three decades. The current population is estimated to be close to 500,000 persons. The increase in population has led to an increase in demand of basic services and infrastructure such as housing, water and sanitation, roads among many others. This in turn has put a strain on the available resources and land which has increased challenges to the municipal council to meet the needs of the town's inhabitants (MCN, 2006).

Kaptombwo location with the bulk of low income earners is the most densely populated with 5,402 people per Km sq. while those under 18 years of age account for 54% of the population in the town. Children under five years account for 16% of the town's population (CBS, 2007).

## **2.4 ORGANIZATION OF THE COUNCIL**

There are seven technical departments each headed by a Chief Officer and all under the town clerk as the Chief Executive (appointed by the Minister of Local Government). They implement council policies, functions and services.

The departments are namely:

1. Public Health
2. Environment
3. Water and Sewerage
4. Municipal Treasurer
5. Social Services and Housing
6. Education
7. Town Engineer

In May 2005, an autonomous company – Nakuru Water and Sanitation Services Company (NAWAS-SCO) fully owned by the council was formed to run the services of water and sewerage on commercial basis. The company is in the process of preparing to increase the water capacity in the town through a

loan from the Africa Development Bank.

In service delivery, there have been numerous overlapping of duties and functions involving the Department of Public Health and the Department of Environment. These two departments need to be clearly defined to avoid conflict.

## **2.5 POLITICAL ORGANIZATION**

The council is the independent supreme establishment handling the health and development issues of the town, with an elected (by fellow Councillors) Mayor as the Head of MCN. The Council has 15 Civic Wards represented by 15 Councillors (inclusive of the Mayor). Inclusions to the council are five nominated councillors.

The elected area Member of Parliament representing the legislative arm of the Government does contribute on matters of health and development in the municipality via the Constituency Development Fund. Projects and programmes to be initiated have to pass through council committees for approval.

## **2.6 FINANCIAL SOURCES FOR THE COUNCIL**

These include:

- Local Revenue – such as user fee for drugs, licensing fees, medical exam fees, mortuary and cemetery fees
- The central government under Ministry of Local Government allocates the municipality a certain amount of funds via the Local Authority Transfer Fund (LATF).
- Financial assistance through partners in projects and programmes.
- Grants from well-wishers.

## **2.7 HEALTH OF MIGRANT POPULATIONS**

This is specifically with reference to the expanding Sudanese nationals in Nakuru town.

The public is concerned about the immunization status of these immigrants. Being from warring communities, immunization schedules and services are questionable. This means that the local children are still at risk of childhood diseases from the immigrants who have not been immunized.

There isn't an identified body that advocates for their registration and needs, and hence various aspects regarding this population are unknown.

Studies should be done to analyze their integration with regards to access of health care facilities and social services.

## **2.8 PROGRAMMES UNDER THE MUNICIPALITY**

### **2.8.1 Local Agenda 21**

Nakuru is the first town in Kenya to spearhead this initiative. It works towards more sustainable urban development of the town, where a wide range of action plans were implemented and supported by the United Nations Center for Human Settlements (UN Habitat) and funded by the Belgian Government. These action plans included the revitalization of the Council's public housing stock, rationalization of space use around the Bus station and market area, environmental planning of the geologically sensitive Western part of the town, improvement of solid waste management and the rationalization of municipal revenues and pricing of services. The project was institutionalized in August 2002 and continues to have linkages within and without various action plans.

### **2.8.2 The Nakuru Strategic Structure Plan**

In the year 2000, Nakuru became the first town in Kenya to produce a Strategic Structure Plan.

The plan carries out an analysis of city wide and area based priority measures of short and long-term solutions and interpretation of the existing problems and challenges as well as potential of Nakuru. It does so by carrying out studies on selected key strategic areas which forms basis for the formulating of

the Intended Spatial Structure (ISS) for Nakuru's desired future. The overall goal is to guide the future of Nakuru up to the year 2020.

Considering investments in the support of infrastructural facilities and services with environmental considerations, the aim is achieving sustainable development.

This process runs in three parallel tracks:

1. Vision: Working towards a long-term vision and a desirable spatial structure.
2. Action Formulation and implementation of action plans removing bottlenecks.
3. Communication; interaction and participation of stakeholders; Dispute resolution between different levels of civic society.

### 3.0 METHODOLOGY

For the purposes of collecting data for this situational analysis, the following methods were employed:

- Observations – through walk-through surveys of the varied settlements and recorded by video and photographs.
- Focused Group Discussions – groups drawn at locational level and composed of :
  - 1) Area Chief
  - 2) Sub-Chief(s)
  - 3) Religious leaders
  - 4) Public Health Officer(s) /technician(s)
  - 5) In-charge of health facility
  - 6) Village Elders
  - 7) Opinion leaders including area councillors
  - 8) NGO representatives
  - 9) CBO leaders
  - 10) Persons Living with HIV/AIDS
  - 11) Home-based Care providers
  - 12) Village Health Workers
  - 13) Traditional Birth Attendants

Proceedings were recorded using a tape recorder.

- Key informant interviews – the town clerk, His Worship the Mayor, Director of Environment, the Chief Public Health Officer, town engineer and Specific Programme Officers.
- Review of secondary data sources – book and article reviews; maps were provided by Local Urban Observatory (LUO).

The framework provided by WKC was utilized to initiate discussion on the urban situation.

From the discussions held with Nakuru town inhabitants, the following social determinants of health and health inequity were abstracted and proposed for this project:

1. Water supply
2. Waste water management
3. Solid waste management
4. Food environments
5. Housing
6. Health care Services
7. Transport

## 4.0 SOCIAL DETERMINANTS OF HEALTH FOR NAKURU, KENYA

### 4.1 WATER SUPPLY

The present water demand for Nakuru is estimated at 100,000m<sup>3</sup> /day while water supply is 50,000m<sup>3</sup> /day, therefore, creating a shortfall of 50, 000m<sup>3</sup>/day.

The intensely felt shortage is aggravated by failure of the water distribution network to expand with the expansion of housing estates and increase in population.

#### **Water and disease:**

Water that is clean at source may be contaminated during drawing, transporting and storage providing medium for bacteria multiplication and hence, contaminating water that was initially safe; while water that is inadequately or not treated at all may harbour disease causing agents.

Such contamination may cause water-borne diseases such as typhoid, cholera and dysentery, and water-based diseases such as schistosomiasis and onchocerciasis. Lack of adequate water may cause water-washed diseases such as scabies, skin infections and salmonellosis.

As seen from the top diseases in Nakuru, diarrhoeal diseases such as typhoid are rampant, as well as skin infections.

#### **Challenges affecting water supply include:**

1. Inadequate supply to meet the rising demand. At the moment there is a shortfall of 50,000m<sup>3</sup>/day. Many parts of Nakuru are affected but the densely settled low-income areas and the recently developed zones and industrial area are worst hit
2. High cost of maintenance, particularly the old network in the CBD and the old residential estates with the old asbestos cement pipe network is difficult to maintain because the accessories are not in the market anymore.
3. Inadequate revenue and rising cost of supply and maintenance of the water supply and distribution system. This is mainly due to high water losses and poor revenue collection.
4. Inadequate or lack of clear policy on private sector and local participation in the water sector.
5. Due to shortage especially in the low income areas, water kiosks and water hawking has taken root, posing health risks to residents.

#### **Recommendations:**

1. Minimize pipe leakages through weekly inspections
2. Maintain consistent distribution pipe diameter to reduce surge bursts
3. Improve consumer payments and connections through planned follow-ups
4. Formulate policies to guide and regulate water provision
5. Extend reticulation system to cover low-income zones

#### **Key stakeholders:**

Nakuru Water and Sanitation Services Company Limited (NAWASSCO), an MCN agency – which manages five water supply sources: Malewa and Mereroni surface water (river) source, and Kabatini, Baharini and Lanet ground water (borehole) sources. This is supplemented by other sources including: The National Water Conservation and Pipeline Corporation, Kenya Army, 8 private boreholes and other Self-help supply schemes.

While most of the water distributed by NAWASSCO to consumers is treated, some of the water from boreholes is untreated. The water reticulation system is inadequate with only about 35 Km sq. (34%) of the municipality being covered.

The area Member of Parliament through Constituency Development Fund has contributed towards the rehabilitation of a borehole.

## Specific programme for water management:

### Nakuru Environmental Management Project (NEMP)

This is a project for improvement of environmental management capacity in Nakuru Municipality and surrounding areas. It was initiated in February 2005

NEMP is directed by the Joint Coordinating Committee (JCC), presided over by the Permanent Secretary, Ministry of Local Government and implemented by MCN, NAWASSCO and KWS, through the assistance of JICA advisory team attached to MCN.

The mission of NEMP is to strengthen the following capacities through four years:

1. Water Quality monitoring
2. Water environmental management
3. Coordination of lead organizations in watershed management
4. Public and Private participation

### Four project components:

- Component 1 aims to strengthen the capacity in collection, analysis, storage and use of reliable data of water quality. Its main activities include the development and implementation of monitoring programs and the formation of a database. The monitoring covers the surface water such as Lake Nakuru, its tributaries, sewerage and factory effluent.
- Component 2 aims to strengthen the capacity in environmental management, i.e. to improve the existing administrative modality with scientific basis supported by the results of Component 1.
- Component 3 aims to promote the concerted actions of the lead organizations for undertaking component 1 and, further, for utilizing the information on the watershed, broader than the coverage of Component 1, so as to envisage a sound watershed management.
- Component 4 aims to enhance public awareness and participation in connection to the above, so as to form a foundation of a solid environmental management of the region.

### Institutions:

1. Municipal Council of Nakuru
2. Nakuru Water and Sanitation Services Company Limited
3. Lake Nakuru National Park
4. Kenya Wildlife Service
5. Water Quality Testing Laboratory



Picture 2: Photograph showing surface drainage channel with waste water draining into it and a 'clean' water pipe crossing through the channel.

## 4.2 WASTE WATER MANAGEMENT

In Nakuru, disposal of domestic human wastes is done through the conventional sewer, cesspools, septic tanks and pit latrines. Nakuru has two sewerage treatment plants with a design capacity of 16, 200m<sup>3</sup>/day. The sewerage area of the town is only 13 Km sq. The sewer reticulation therefore serves about 19% of the built-up area. Cesspools and septic tanks are common in high income areas such as Milimani, in public institutions and in some middle and high income newly settled areas such as Naka, Kiamunyi and Teachers. The use of pit latrines is limited to low income, high density settlements such as Rhonda, Kaptembwa, Kiamunyeki and Barut. Generally, 11% of the unsewered households use septic tanks while 85% of the households use pit latrines.

The rest dispose of their waste openly and indiscriminately such as towards surface drainage channels on the road.

### **Liquid waste and disease:**

Because liquid waste contains organic matter, large numbers of micro-organisms including bacteria, viruses, algae, fungi and protozoa are found. When a person comes into contact with untreated liquid waste they are at risk of contacting worms and coliforms as the main infectious agents that result in diarrhoeal diseases (typhoid, dysentery, cholera). Water-related vector diseases occur when liquid waste stagnates on ground surface when mosquitoes, flies and other insects breed or bite resulting in diseases like, yellow fever.

### **Challenges affecting waste water management:**

1. Existing sewerage system only serves less than 20% potential area.
2. More than 5,000 consumers connected the Municipal water supply are not connected to the municipal sewer line.
3. There are frequent blockages due to non-maintenance of the sewer and inadequate water supply.
4. Toxic elements which are potential pollutants are often discharged into the sewer, sewage and treatment plants.
5. Ineffective surface water drainage and discharge from the septic tanks\cesspools cause excessive discharge into, and overloading of the existing sewerage system.
6. Revenue collection is less than 45% of the amount due.
7. Due to lack of waste water management options, residents in densely populated areas discharge liquid waste directly to storm water drains or onto the roads resulting in foul odours (air pollution) and a health risk. Children play in stagnant sewage on the roads exposing them to diseases.

### **Recommendations:**

1. Increase sewer coverage from the current 20% to a minimum of 80% targeting the low income zones.
2. Match provision of piped water to that of sewer coverage
3. Conduct weekly inspections to eliminate frequent blockages
4. Sort and treat toxic waste before joining the municipal sewer
5. Provide independent drainage for surface run-offs.

### **Key Stakeholders:**

This is handled by NAWASSCO in the municipality. Other private institutions providing such services include Nakuru Environmental Consortium.

Conservancy issues are also handled by the town legislator through the Constituency Development Fund.

### 4.3 SOLID WASTE MANAGEMENT

The management of solid wastes in Nakuru town is primarily the responsibility of the MCN. However, in recent years private sector entrepreneurs have increasingly been involved in refuse collection and disposal. Municipal collection services cover most of the old town but the outlying and the newly developed areas are not served. These areas rely heavily on individual, private or in-house initiatives. Nakuru town has only one designated dumping site located on the Western side of the town (London). This is the Goto dumping site. Here, open dumping on a slope in an abandoned quarry is practiced. The majority of waste generators however dump their refuse in undesignated dumping sites where it is either burnt or left unattended.

MCN has built eleven refuse chambers and availed storage containers but only in a few places. The plastic bag menace has become a major concern not only in Nakuru town only but the whole country. This if left unattended and unabated will become a crisis.

Proper waste management involves planning, forecasting, organization and execution of the various aspects of solid waste: generation, collection, transportation and disposal.

#### **Solid waste and disease:**

Inadequate disposal techniques lead to breeding of disease vectors such as flies, mosquitoes, cockroaches and rodents. Garbage heaps also attract scavenger birds and animals such as dogs and pigs. This results in creation of nuisances. The heaps also results in the hazard of contaminating ground and surface waters and air pollution.

#### **Challenges facing solid waste management:**

1. Accumulation of uncollected waste that is indiscriminately dumped increases health risk, block drains and pollute Lake Nakuru.
2. Inadequate funding of refuse collection and poor revenue collection.
3. Inadequate refuse vehicles and lack of maintenance of existing refuse vehicles.
4. Lack of needed management, technical and waste handling personnel.
5. Low public awareness on environmental health.
6. Poor location, operations and management of the existing refuse disposal site.
7. Ineffective handling and disposal of solid waste by the domestic, commercial and industrial generators.
8. Indiscriminate dumping of non-biodegradable material such as polythene bags in undesirable areas such as road reserves. In addition, these plastic bags and tins hold water
9. Solid wastes left unattended become eye-sores and sources of foul smells.

#### **Recommendations:**

1. Establish a planned and well coordinated weekly waste collection routes
2. MCN to allocate adequate funds for refuse collection and maintenance of collection vehicles; alternatively develop and implement an out-sourcing plan
3. Develop staff capacity for the management, technical and waste handling personnel.
4. Tailor-make well coordinated public campaigns to improve public awareness on environmental health.





*Picture 3: photograph showing indiscriminate dumping by a road side*

Key Stakeholders:

MCN – through the Department of Environment

NGO's (World Wide Fund for Nature)

CBO's

#### **4.4 FOOD ENVIRONMENTS**

##### **Importance of food environments**

The Kenyan Government under the Ministry of Health came up with the Kenya Expanded Programme for Immunization (KEPI) to be able to vaccinate children against potentially fatal childhood diseases. In addition to these vaccines are vitamin A supplements given to the children in order to boost their development. The government and the private sector also via School Feeding Programmes have helped so many marginalized areas such as Barut where crop failure is a usual phenomenon. Maternal and Child Health clinics in municipal health centers give appropriate nutritional advice to mothers with regards to their children's health as well as their own health. Children's weight and height are taken, hence monitoring growth. This helps in early detection of children who are potentially at risk of malnutrition and corrective measures instituted early enough.

##### **Food environment / Nutrition and HIV:**

With the recent alarming rates of HIV infection, immuno-suppressed patients need to boost their daily intake of foods high in immuno-boosters. Under the Comprehensive Care Programme initiated by the Ministry of Health offered at the Rift Valley Provincial Hospital, clients are supplied with food supplements that are sufficient in immuno-boosters.

Children borne of HIV-positive mothers are supplied with breast-milk supplements and vitamin A supplements to boost their development without breast-feeding.

## **Food Environment and Health**

This can be broadly classified into two categories:

### *1. Food Hygiene*

This concerns measures necessary to ensure wholesomeness and soundness of food at all stages of production, preparation, marketing and distribution.

The MCN under the Public Health Department carries out the primary objective of Food Quality Control under the guidance of the Public Health Act, Cap 242, Food Drugs and Chemical Substances Act, Cap 254 and the Meat Control Act, Cap 356. This is to protect the consumers against being offered food that is harmful to health i.e. with pathogens and toxic agents that could lead to diarrhoeal diseases such as typhoid, and amoebiasis.

### *2. Food Science*

This relates to food components, the chemical and biological changes they undergo during processing, storage and handling. Issues relating to malnutrition and food poisoning arise. Malnutrition is either as a result of lack of food or due to ignorance or lack of knowledge of nutritional values and required daily allowances for food. These inadequacies in quality and in quantity are affecting children as seen in the Maternal and Child Health clinics. Individual preferences, lifestyles and culture also affect the type of food consumed for instance; there are growing cases of obesity in high income households due to over-indulgence in over-processed and diets high in carbohydrates and fats. Obesity related illnesses e.g. high blood pressure and diabetes are also on the rise.

### **Challenges facing food environments in Nakuru town include:**

- 1) Mushrooming of informal, unplanned food kiosks and cooking in the open is a worrying trend especially in industrial area and low income residential areas. These food vendors target specific groups and are found near schools targeting school children, near industries and factories and near busy areas like public vehicle parks.
- 2) Existence and services provided by people who have not undertaken health examination.
- 3) Development of unlicensed food premises.

### **Recommendations:**

1. Curtail the development of unplanned and unsanitary informal, unplanned food kiosks and cooking in the open.
2. Enhancing food law enforcement.



**Picture 4: photograph showing food vendors in open air**

**Key Stakeholders:**

- MCN through the Public Health Department
- NGO's for instance SCAN and YMCA dealing with nutrition of street children
- Ministry of Health
- Ministry of Agriculture
- CBO's

Recently, preventive care for the elderly has gained greater emphasis. In such circumstances, however, under-nutrition among the elderly is coming to the fore. Under-nutrition of the elderly is attributed to the trend towards nuclear families and mobility of caretakers. In these circumstances, many elderly people find it difficult to do grocery shopping and cooking due to frailty and inadequate intake of balanced diets.

There is only one home for the elderly and of which is hardly functional due to lack of funds. Food environments are relevant social factors that affect diets. It is important to examine social factors related to individuals' eating habits and continue research efforts to improve food environments. These efforts will contribute to the success of public health promotion policies and programs implemented by the Kenyan government.

**4.5 HOUSING**

The adequate provision of housing for the ever-increasing urban population is a necessary input into the orderly and sustainable growth of urban centers. Provision of land for housing and the production of adequate and appropriate housing stock will have a direct link to the wellbeing of the town's inhabitants and the growth of the other sectors of the economy such as industry and commerce.

## **Housing provision:**

### **Public housing:**

There are at least 6956 public housing units within Nakuru town, 5434 of which are owned by the MCN and 1522 by Central Government Departments and Corporations. The rate of growth in the public housing sector is minimal.

Council rental houses are well serviced and are close to social halls and council health facilities. Middle-to low income earners are beneficiaries of public housing.

The charging of low rents which are below market rates is not sustainable leading to poor maintenance and deterioration of existing infrastructure.

### **Private housing:**

The private sector is the largest provider of housing in Nakuru town. The rate of house formation is very high.

It is estimated that the majority (87%) of Nakuru residents are tenants while a significant 13% own and occupy their own units. Owner occupied housing has lower plot coverage and has relatively lower densities. These are prevalent in middle to high income areas mainly, Naka, Lanet, Kiamunyi, Section 58 and Milimani.

Private housing offers a wide range of accommodation types including formal and informal single rooms (Rhonda, Kaptembwa), bungalows (Milimani), Maisonettes (Kiamunyi) and flats. The formal private housing for high and middle income is well served by water, sewer and septic tanks. The areas with private informal housing occur in Rhonda, Kaptembwa and Mwariki. Such households in such housing are faced by a number of problems including poor planning, inadequate support infrastructure such as roads, drainage, garbage collection, water, electricity and inadequate public spaces. Overcrowding is a common phenomenon in such housing. Housing development is haphazard and does not take cognizance of the required building standards. It is dominated by the economic motive disregarding other essential social, aesthetic and environmental long-term impacts on the inhabitants of the town.

### **Housing and health:**

Construction that does not meet public health legislated standards poses serious hazards to health and human life. Some of the easily preventable diseases such as tuberculosis, meningitis, upper respiratory tract infections (perpetuated by dampness and overcrowding) and household injuries often occur as a result of unsanitary housing of poor design and construction. Prevention of dampness, proper lighting and ventilation should specifically be addressed.

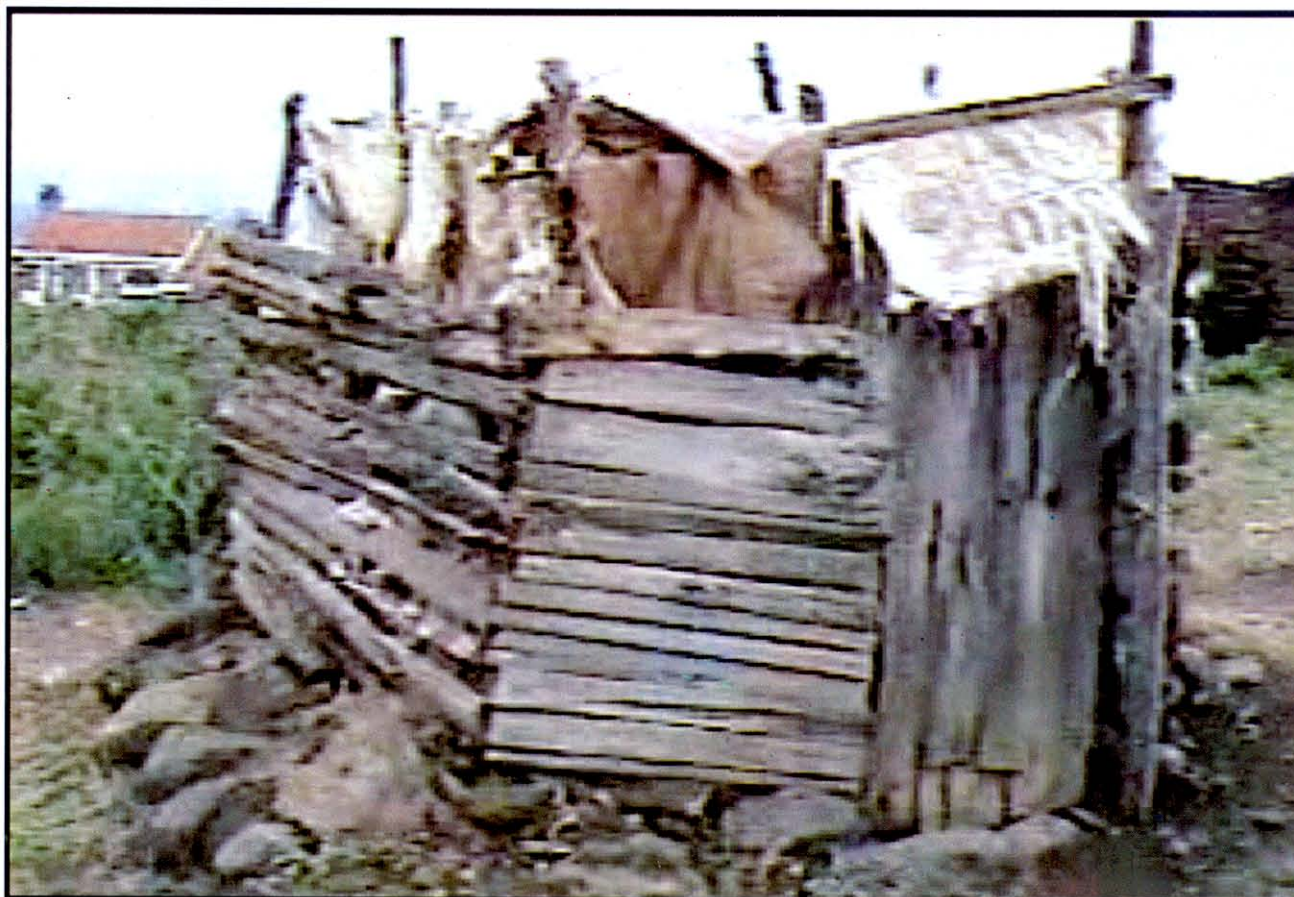
Other houses are situated within the environmentally sensitive areas and are thus prone to injuries and loss of lives due to slope gradient, mud slides and ground subsidence.

Challenges facing housing in Nakuru Municipality:

1. Lack of funds for maintaining council houses.
2. Poor building ethics and adherence to the Building Code and Building By-laws leading to low standard/quality housing.
3. Lack of proper planning.
4. Lack of adequate law enforcement.
5. Land grabbing especially of public utility land.
6. Housing developments situated in environmentally sensitive areas.
7. Lack of sufficient infrastructure to expand with expanding population and housing.
8. An influx of people into the town has increased the demand for housing resulting in development of slums and overcrowding.
9. Lack of adequate and supportive infrastructure in low income urban areas.
10. Majority of women are impeded to own houses and access to mortgages.

### **Recommendations:**

1. Enforcement of laws and regulations for the building and construction industry to ensure quality in structures and proper planning.
2. Allocation of funds for maintenance of council houses.



**Picture 5: photograph showing a low income settlement against a backdrop of high income residential settlement**

3. Development of housing units and supporting infrastructure to match increased demand.
4. Advocate for women and other disadvantaged groups to own houses and gain access to mortgages.

**Key Stakeholders:**

Ministry of Housing

MCN through Department of Social Services and Housing, Department of Public Health and Town Engineer's department.

NGO's such as Nakuru Business Association, Intermediate Technology Development Group (Practical Action)

Architectural Association

Community Based Organizations such as Nakuru Tenants Association.

**4.6 HEALTH CARE SERVICES**

**Disease burden:**

Respiratory diseases and malaria are the leading causes of morbidity. The top ten common diseases reported in 2006 from five health centers run by the Nakuru municipal Council are listed below:

- |                                       |                    |
|---------------------------------------|--------------------|
| 1. Upper Respiratory Tract Infections | 2. Malaria         |
| 3. Gastroenteritis                    | 4. Dermatitis      |
| 5. Broncho-Pneumonia                  | 6. Traumatic wound |
| 7. Bronchitis                         | 8. Gastritis       |
| 9. Abscess                            | 10. Typhoid        |

Source: MCN/Public Health Department Report for 2006.

### **Existing Health Facilities and Providers**

The main health service providers in Nakuru are:

1. Municipal Council of Nakuru
2. Ministry of Health
3. Non-governmental organizations such as APHIA II (a conglomeration of various health oriented NGOs)
4. Private hospitals and clinics
5. Herbalists

### **The following facts are worth noting:**

1. Ministry of Health operates Provincial General Hospital with a capacity of 715 beds and 46 cots, serve an area of 7291 Km<sup>2</sup> with 1.5 million people (Nakuru, Kiambu, Laikipia, Nyandarua, Baringo, Kericho, Narok and Kajiado districts) and handles an average of 27,000 admissions and 170,000 outpatients a year.
2. Municipal Council of Nakuru operates 1 maternity (Bondeni Maternity), 1 health centre (Langa Langa Health Centre) and four dispensaries (Industrial area, Bondeni, Nakuru West, and Flamingo).
3. Private sector operate 4 major private hospitals (Pine Breeze, Valley, Sunrise, and War Memorial and 2 nursing homes (Menengai and Nakuru).
4. Besides these are 210 private health practitioners and numerous Herbal Clinics, a number of church-ran dispensaries, 1 private maternity and a number of health clinics ran by Muslim faith. The Family Planning Association of Kenya runs 1 family planning clinic.
5. There is no health facility at the district level that could help in decentralizing of important health services.

### **Key health problems and issues in Nakuru:**

1. Inadequate maintenance of physical facilities and equipment in public (municipal and government) health facilities.
2. Health facilities are not adequate in the densely populated, low income settlements. The No. 1 Nakuru Provincial hospital cannot cope with rising demand.
3. Unavailability of essential drugs and vaccines leading to crisis in immunizations and other areas of treatment and prevention.
4. Shortage of staff – both clinical and public health staff (15 Public Health staff, 8 of whom are on secondment from the District offices).
5. Lack of a proper coordinating committee for all health service providers including MoH, MCN, NGO's and private health practitioners so as to keep informed records for surveillance purposes.
6. Mushrooming of private clinics which more often than not have unqualified staff manning them.
7. Mushrooming of private Herbal clinics has led to confusion in the health sector, Nakuru town not being spared of the confusion. Appropriate regulatory measures should be encouraged in order to integrate alternative medicine and Herbalists into the health care system to avoid unscrupulous traders.
8. Record keeping and surveillance continue to be a challenge in the health sector.
9. A number of health facilities do not have clearly surveyed and demarcated land.
10. Many health problems are due to unsanitary environment and can be prevented through improved primary health care.

### **Recommendations:**

1. Improve maintenance of physical facilities and equipment in public health facilities.
2. Build and equip more health care facilities in low income, densely populated settlements to aid in decentralization of health care services.
3. Improve access and availability of essential drugs and vaccines.
4. Employ more staff to curb shortfalls.
5. Improve networking among health stakeholders to improve quality of information and hence improve decision-making.
6. Regulate the development of private clinics and herbal clinics.

## 4.7 TRANSPORT

Nakuru town is well linked to the international, national and regional transportation systems. The Trans-African Highway (A104) linking the city of Mombasa in Southern Kenya to Kampala (Uganda) and the main Uganda Railway pass through the center of the town. These provide freight and passenger services. The town is connected to its hinterland through the Nyahururu, Njoro and Marigat primary road system.

At the local level, Nakuru town itself has a network of roads laid out in a gridiron pattern providing access to almost all areas of the town. The sub-urban areas are well connected to the town but lack direct linkage between themselves. The MCN is responsible for 236 Km of road network within the town. About 74 Km is in fair condition while the rest are either in poor or impassable conditions. The municipal council is not in a position to properly maintain its road network.

Due to population increase and economic growth in recent years, traffic flow in the town has increased tremendously and is very evident during rush hour where traffic police are deployed to control flow of vehicles. This is done through the Traffic Control Act.

Currently there are estimated to be 2,500 matatus (10 to 14 persons carriers), 100 minibuses, 200 buses, 50 tuk-tuks(auto-tricycles) and 3,000 bicycles (boda-boda) for public transport within the town.

### **Transport and disease:**

Transport related injuries are a leading cause of morbidity. With the recent advent of bicycle carries for commercial purposes, the numbers of accidents have also sky-rocketed. Injuries involving boda-bodas average at 20 casualties per week. Due to non-existence of demarcated areas for such carriers, they are forced to squeeze and compete on the main roads with other vehicles and this causes confusion on the roads.

Other problems include air pollution and elevated noise levels.

With the Public Transport Reforms implemented in 2003, the number of accidents caused by matatus and buses has significantly reduced by over 50%.

Challenges facing the transport sector:

1. There is congestion in some routes owing to non-segregation of local and through traffic.
2. The heavy local and through traffic causes air pollution and elevated noise levels (especially by huge goods carriers and the recently introduced tuk-tuks).
3. There is little provision for non-motorised transport especially for cyclists.
4. The available junctions and roundabout are inadequate and their capacities should be increased.
5. Congested terminus for matatu, buses, tuk-tuks and boda-bodas.
6. Poor organization and control of boda-bodas.
7. Poor visibility of boda-bodas at night.
8. No properly designated routes for boda-bodas.
9. The boda-boda business is not properly regulated.
10. Regular flaunting of traffic rules and regulations requiring strict enforcement.
11. Corruption involving Traffic law enforcers.

### **Recommendations:**

- Segregate local and through traffic by use of by-passes.
- Provision for cyclists on the roads.
- Enforce traffic laws and regulations to curb the boda-boda menace.

### **Key stakeholders:**

Ministry of Transport

Ministry of Public Works

Kenya Roads Board

CBOs like Matatu Owners Association, Various Matatu Savings and Cooperative Societies, Boda-Boda Association e.t.c.

NGOs like ITDG – Practical Action

## 5.0 SUMMARY AND CONCLUSIONS

The social determinants of health identified and considered to be relevant for the health inequalities in Nakuru include availability of water, waste water and solid waste management, food environments, housing and health care services.

Provision of portable water for domestic use is seen as the first priority and most felt need by Nakuru residents. This is only possible if the existing system is rehabilitated and expanded.

Poor waste water and solid waste management is a challenge to the MCN and the agencies charged with removal of such wastes. Re-organization of services and proper planning to accommodate all constituent activities is needed.

In regard to food environment, various problems have been identified across the lifespan. More effective approaches targeting social and environmental factors are needed to deal with health problems such as malnutrition and food-borne diseases.

Many elderly people, the disabled and lower income victims are unable to construct their own houses and rent relatively affordable housing. Housing environments affect lifestyle and health of residents.

Transport is not orderly and regulatory measures should be put in place to regulate bicycles and roads should be improved.

Key stakeholders related to these social determinants of health are various organizations (both private and public). Self-help groups are quite difficult to monitor and follow up. Most of them do not always directly deal with people's health; however, in order to reduce health disparities of the population in Nakuru, all the stakeholders including the various town departments should be involved actively in decision- and policy-making.

### **Emergent issues from the Nakuru Town Planning Meeting held on 7th July, 2007:**

It was agreed that the above social determinants of health are the core issues Nakuru is dealing with. However there are others that include:

1. Human – wildlife conflict along areas bordering Nakuru National Park.
2. Roaming dogs that need to be removed and carcasses properly disposed off.
3. Unemployment – measures to empower the communities for financial benefit should be devised.
4. Nakuru requires a working ambulance that would be available for the convenient use of the residents.
5. Regulation of private clinics, herbal clinics and dubious medical training colleges is mandatory.

### **Emergent issues from the Healthy Cities Orientation workshop:**

It was generally agreed that Nakuru is ready to move to the next step in implementation of the Healthy Cities Programme.



## 6.0 RECOMMENDATIONS

Intersectoral collaborations, closer connections and communications among stakeholders to work on social determinants of health through good governance are recommended. Political good-will should be encouraged and nurtured in order to foster collaboration in health and health care delivery. Addressing of specific challenges enumerated in this report would help in optimizing the respective social determinant of health.

Measures to optimize the impact of social determinants of health and promoting a healthy Nakuru town include:

### SHORT-TERM

1. Improve environmental health within the specific SDH.
2. Better coordination of activities carried out by all the stakeholders and mobilize intersectoral action.
3. Boosting of cooperation, fostering partnerships and capacity building of stakeholders.
4. Increase health awareness and healthy lifestyle among residents through health education, promotion and advocacy.
5. Improvement in community mobilization and participation in health oriented programs and forum.
6. Encourage efficiency in law enforcement especially in the Public Health and Environment Departments of the MCN.

### LONG-TERM

1. Develop programs for reduction of poverty.
2. Development and establishment of social amenities and infrastructure to match increased demand and upgrading/rehabilitation of existing ones.
3. Develop a strategic Nakuru Health Plan involving all stakeholders including children, women, the elderly and disadvantaged groups.
4. Secure healthy public policy and reassess existing ones.
5. Proper allocation and management of funds for health should be encouraged and an accountability framework should be incorporated.
6. Develop practical methodologies for monitoring social gaps and inequalities in quantity, quality and financing of health and health care to assess impact of health care reforms and programs, and develop strategies for reducing these gaps.
7. Monitor and evaluate performance of programs.
8. Training and re-training health personnel to follow with current technologies.

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## APPENDICES

### FOCUSED GROUP DISCUSSIONS: LIST OF PARTICIPANTS

Healthy Urbanization: "Optimizing the Impact of Social Determinants of Health on Exposed Populations in Urban Settings"

### A SITUATIONAL ANALYSIS ON SOCIAL DETERMINANTS OF HEALTH AND HEALTH INEQUITY IN NAKURU, KENYA

#### FOCUSED GROUP DISCUSSIONS HELD ON 26TH MARCH, 2007

#### LIST OF PARTICIPANTS FOR KAPTEMBWA\ RHONDA\ MWARIKI\ LONDON

NAME	DESIGNATION
1. Joshua Korir	Chief – Kaptembwo Location
2. John Wachiuri Mwangi	Councillor – Viwanda Ward
3. Abdi Adan	Elder – Chief 's Office
4. Mary Kangi	Field Officer - ICROSS
5. Phillip Mokora Ogechi	Chairman – Rhonda/Nakuru C. N. W.
6. John Kahato Njoroge	Chairman - Rhonda CBO, ROCBO
7. Daniel Muinde	Rhonda Ward – N. W. Committee
8. Peter K. Kingori	Elder - London; MEWAREMA – CBO
9. James K. Kilonzo	Elder - London
10. Eliud Kabiru	Elder - Viwanda
11. Rev. Joseph Mutemi	Church Pastor
12. Joseph Ndichu	Elder – Gilani Estate
13. Joseph K. Birir	Councillor – Kaptembwo Ward
14. Charity K. Njue	Nurse – Nakuru West Clinic
15. Rispah N. Momanyi	Public Health Technician – Nakuru West
16. Joseph Omwebu	Rhonda Resident
17. James Mambe	Rhonda Resident
18. Wachira Ngoru	Councillor – Hospital Ward
19. Samwel Nyakambi	Municipal Public Health Officer and Research Assistant

#### FOCUSED GROUP DISCUSSIONS HELD ON 27TH MARCH, 2007

#### LIST OF PARTICIPANTS FOR BONDENI\ FLAMINGO

NAME	DESIGNATION
1. Alinur Hassan	Assistant Chief – Baharini Sub-location
2. Mahamed Ali	Elder
3. Stanley Kinuthia	Elder
4. Sospeter Kimani	Elder
5. Pastor George Mwangi	Chairman – Nakuru Tenants Association
6. Anne Njeri	Christian Children Fund – Nakuru Town
7. Jane Nyandiko	Woman Leader\ Village Woman
8. Mary J. Ayabei	Public Health Officer
9. Issa Gichangi	Chairman – Mji Wa Kale and Imam
10. Rose Mboya Ochieng	Nurse\KRCHN
11. Paul Waititu	Public Health Officer Nakuru South

12. Elijah Oyombe Akachi	Nakuru AIDS Organizing Secretary
13. Emily Waweru	Nurse – Langa Langa Health Center
14. Ali Omar	Home Based Care
15. David Gikaria	Councillor – Lakeview Ward
16. Hassan Unyo	Security
17. Samwel Nyakambi	Municipal Public Health Officer and Research Assistant

## FOCUSED GROUP DISCUSSIONS HELD ON 30TH MARCH, 2007

### LIST OF PARTICIPANTS FOR BARUTI

NAME	DESIGNATION
1. Benjamin C. Rono	Chief – Baruti Location
2. Maurice K. Omollo	CBO
3. Joseph Wilfred Bosire Ogembo	C. F. C. A.
4. Leah Jemeli Kurgat	HBC
5. Michael K. Koech	HBC
6. Eseri Aswani	CP Secretary – Maendeleo Ya Wanawake
7. Joseph K. Langat	TOT – HBC Programme
8. Elizabeth Githinji	Chairlady - Traditional Birth Attendant
9. Anne Chebet	Chairlady – ST.RITA
10. Julian Chelan'gat	ST. RITA Secretary
11. Ndegwa Mwangi	Kilimo Environmental Group
12. David Kahoro	Kilimo Environmental Group
13. Norah Kwamboka	Treasurer – Maendeleo ya Wanawake
14. Sally C. Langat	Chairlady – A.I.W.C.
15. Simon Erung	Pastor – Ingobor
16. George Ndiema Kipchana	Village Elder
17. Stephen Rotich	Paralegal – E.C.W.D.
18. Jane Odinga	Public Health Officer\ TOT\ HBC Baruti
19. Samwel Nyakambi	Municipal Public Health Officer and Research Assistant

## FOCUSED GROUP DISCUSSIONS HELD ON 5TH MARCH, 2007

### LIST OF PARTICIPANTS FOR LANET

NAME	DESIGNATION
1. S. K. Lelei	Chief - Lanet Location
2. Francis Mwathi	Elder – Free Area
3. Felix Abwoya	Elder – Kiratina
4. Richard Obuya	Muguga
5. Wilfred Gikanga	Muguga
6. George Kungu	Lanet Clinic
7. Peter Munga	Free Area
8. Margaret Ngugi	Teachers Wamagata
9. Christine Mwangi	Naka
10. Dorothy Lavusa	KECHNurse
11. Mary Waweru	Nursing Officer
12. Sylvia Wanjiru	Kiratina
13. Philip Kipchumba	Health Counsellor – Family Health International
14. Ruth Wambugu	Free Area
15. F. M. Wainaina	Elder – Kiratina

- |                          |  |
|--------------------------|--|
| 16. Danson Mburu         | Kiratina   |
| 17. John Gitau Kimani    | Pipeline   |
| 18. Mary Waithera        | Village Woman – Nyamarutu                              |
| 19. Lucy Wangari         | Village Woman – Nyamarutu                              |
| 20. Rev. Matthew Musyoka | Pipeline   |
| 21. Alice N. Mbanda      | Pipeline   |
| 22. Walter Ngethe        | Muguga   |
| 23. Samwel Nyakambi      | Municipal Public Health Officer and Research Assistant |

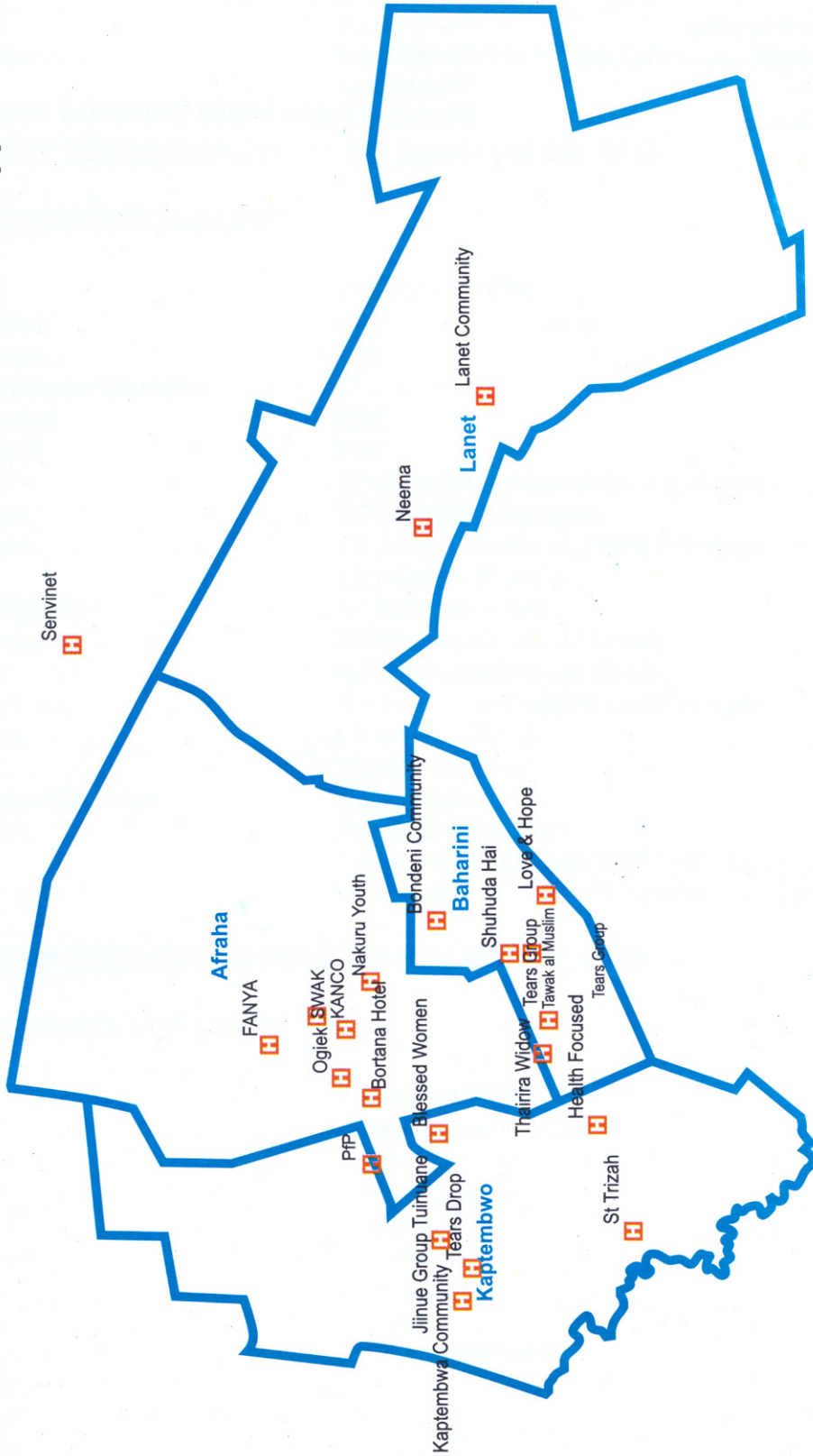
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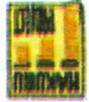


### Location of HIV/AIDS Support Groups



Key

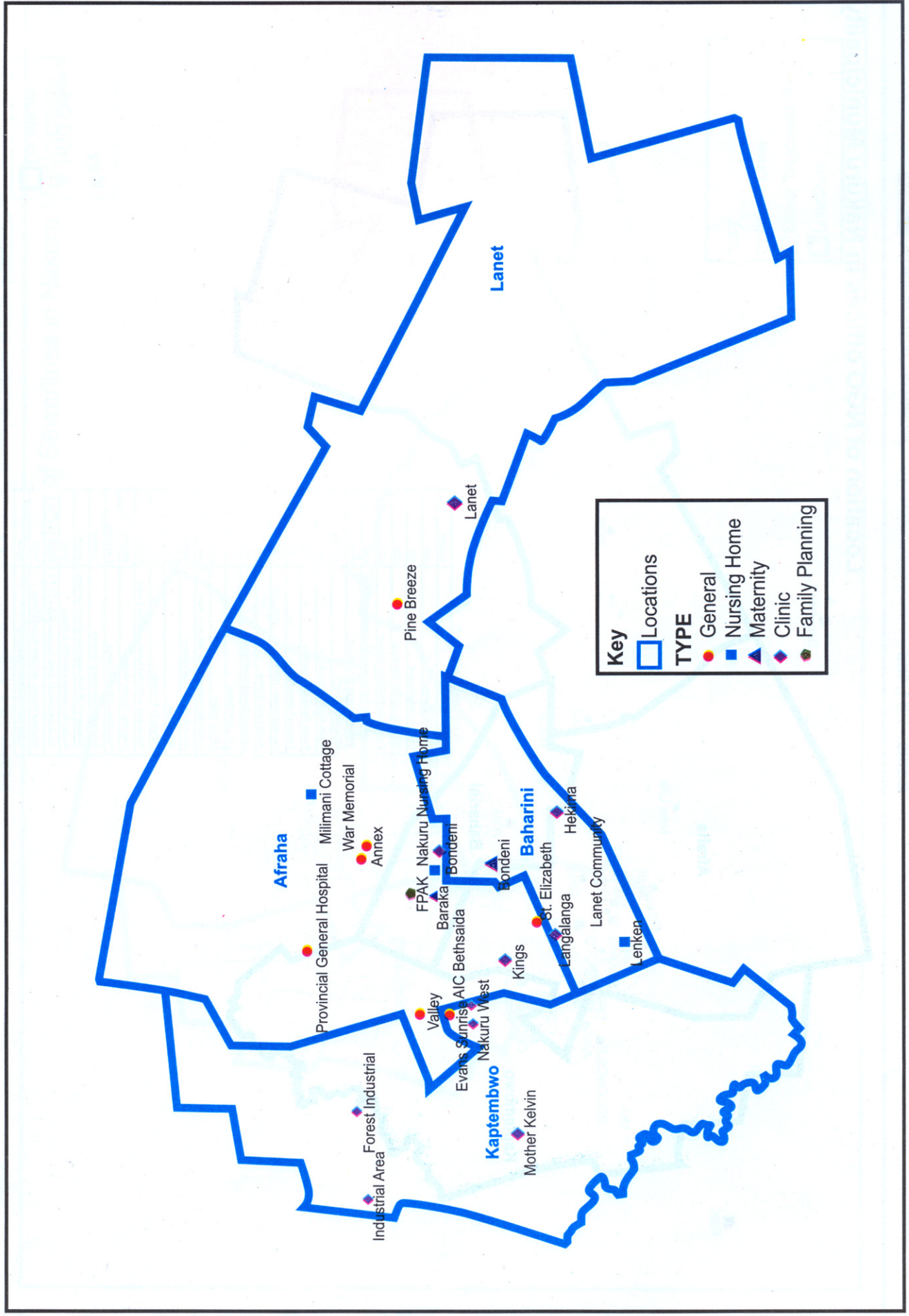
- HIV Support Groups
- Locations



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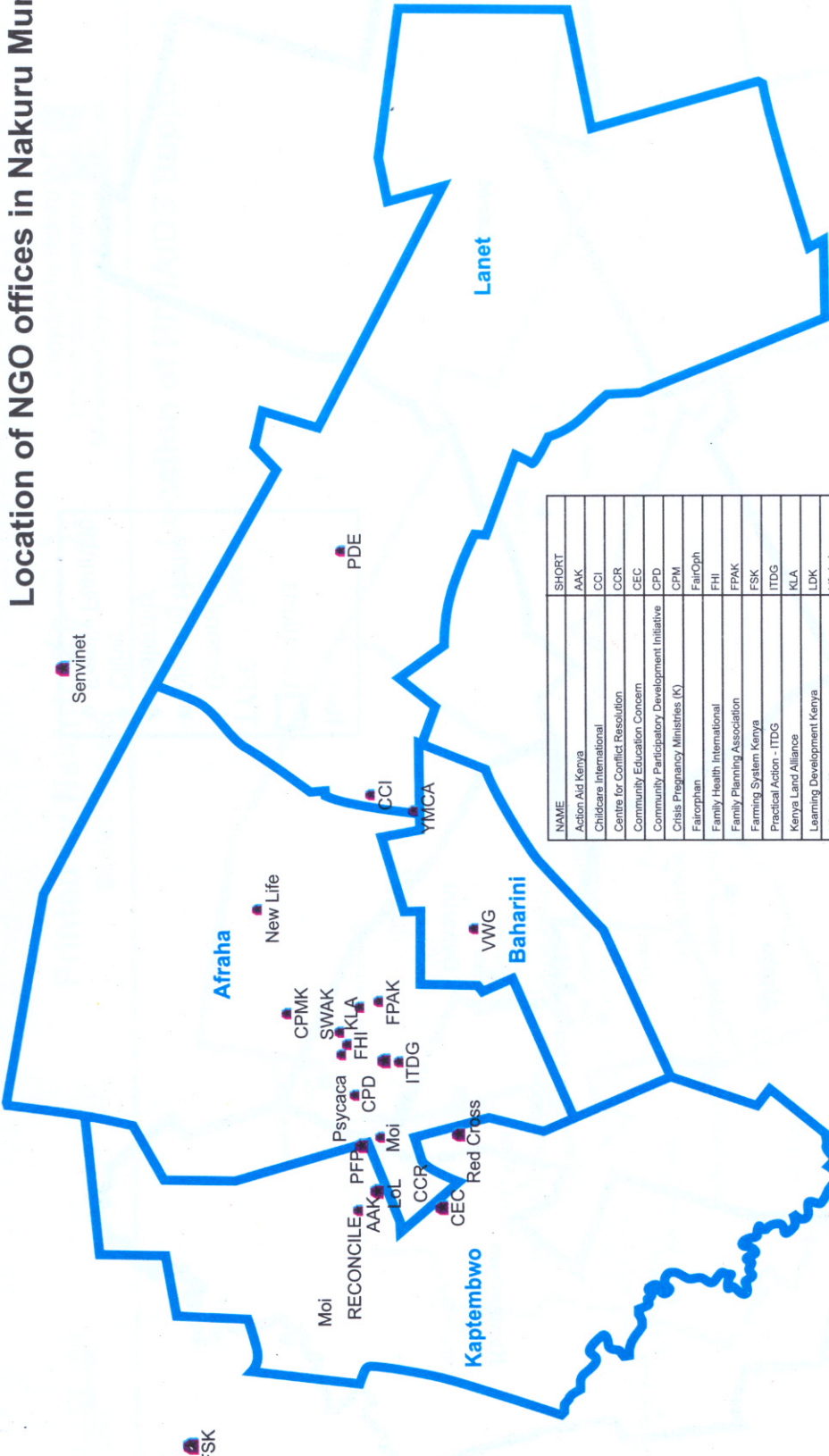


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# Location of NGO offices in Nakuru Municipality



NAME	SHORT
Action Aid Kenya	AAK
Childcare International	CCI
Centre for Conflict Resolution	CCR
Community Education Concern	CEC
Community Participatory Development Initiative	CPD
Crisis Pregnancy Ministries (K)	CPM
FairOph	FairOph
Family Health International	FHI
Family Planning Association	FPAK
Farming System Kenya	FSK
Practical Action - ITDG	ITDG
Kenya Land Alliance	KLA
Learning Development Kenya	LDK
Life Labor Kenya	Life Labor
Land O Lakes	LoL
Child Welfare Society of Kenya - App Moi C Home	Moi
New Life Home Trust - Nakuru	New Life
PDE Kenya	PDE
Fathers for Progress	FFP
Psychological Conflict Awareness and Control	Psychaco
Resource Conflict Institute	RECONCILE
Red Cross Society of Kenya	Red Cross
Schools Environmental Network	Servinet
Streams of Life Ministries International Services	Streams
Society for women and AIDS in Kenya	SWAK
Universal Lifeline Ladder Organisation	ULLO
Volunteer Women and Girls Support Group	VWG
Young Men Christian Association	YMCA

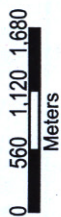


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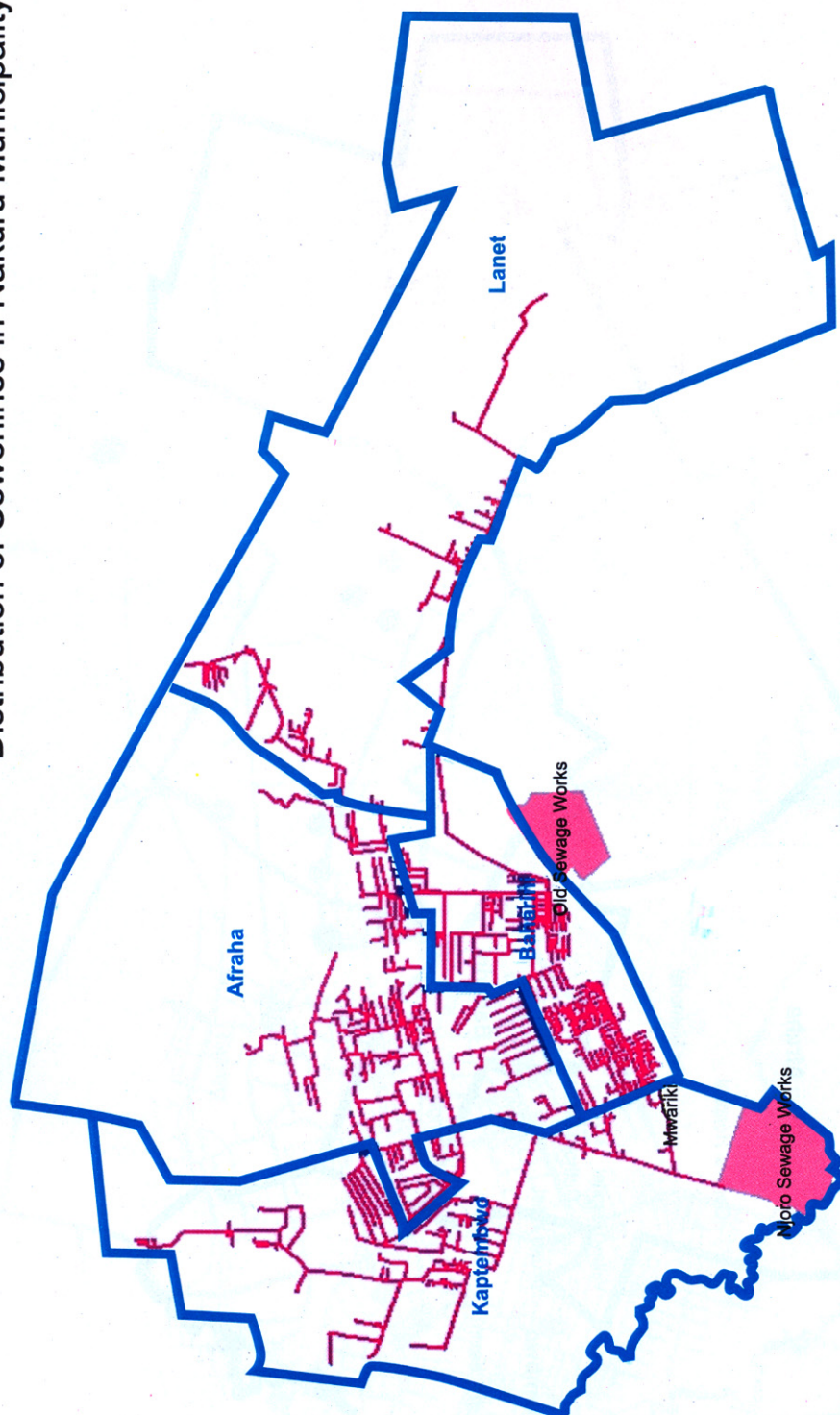


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### Distribution of Sewerlines in Nakuru Municipality



**Key**

- Sewer Lines
- Sewer Treatment Plants
- Locations



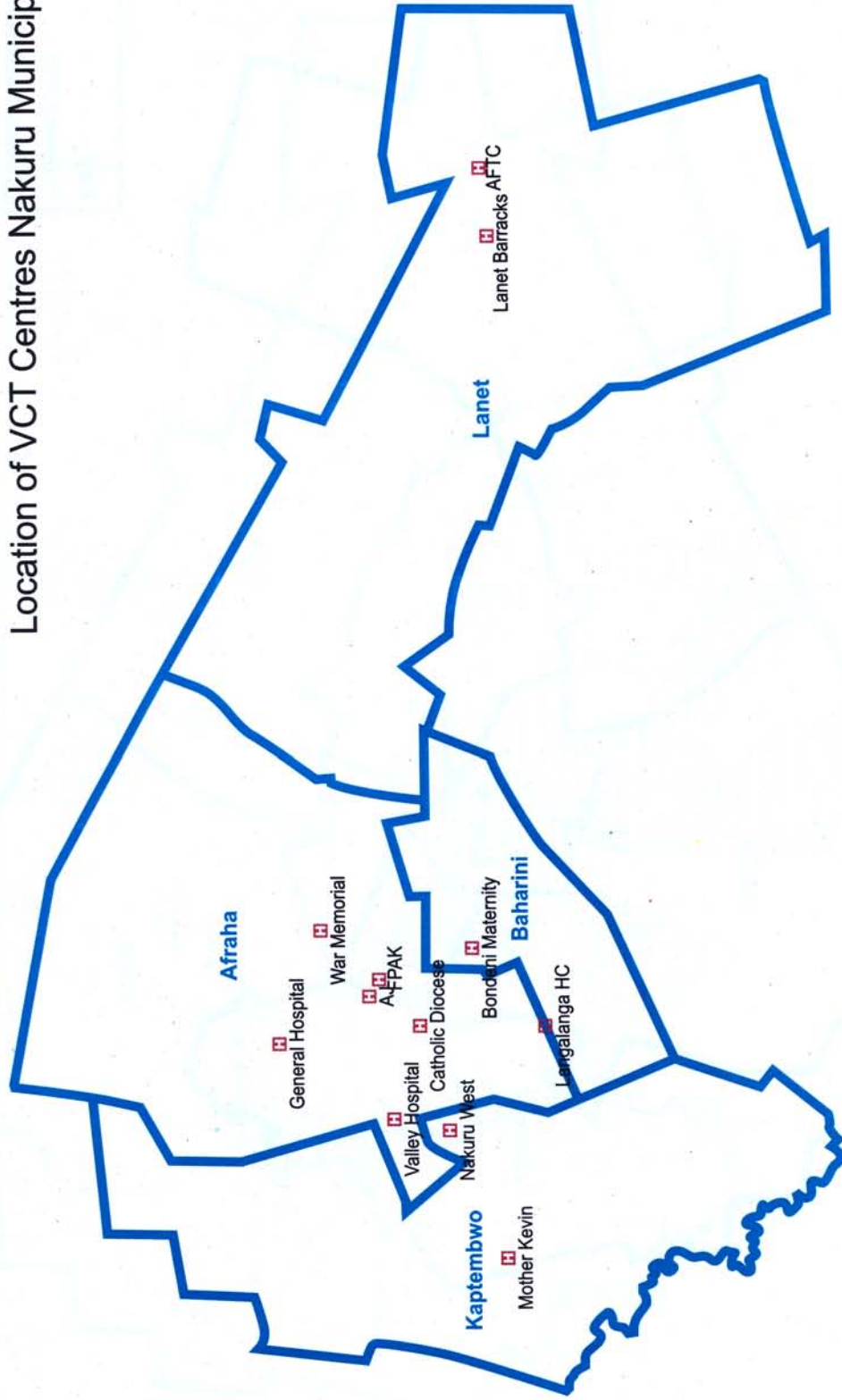
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### Location of VCT Centres Nakuru Municipality



**Key**  
■ VCT Centres  
▭ Locations

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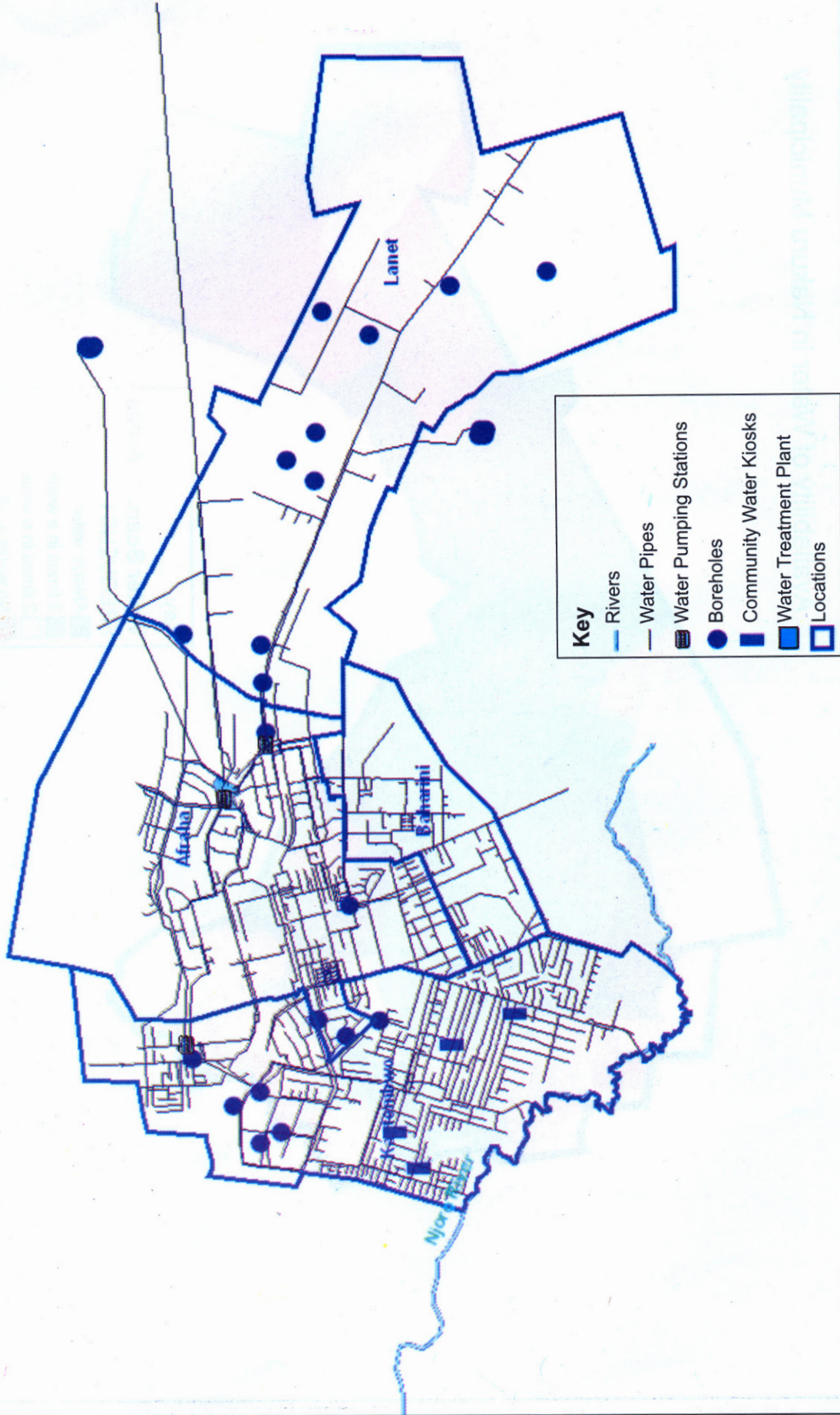


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Meters

### Water Sources and Water Distribution in Nakuru Municipality



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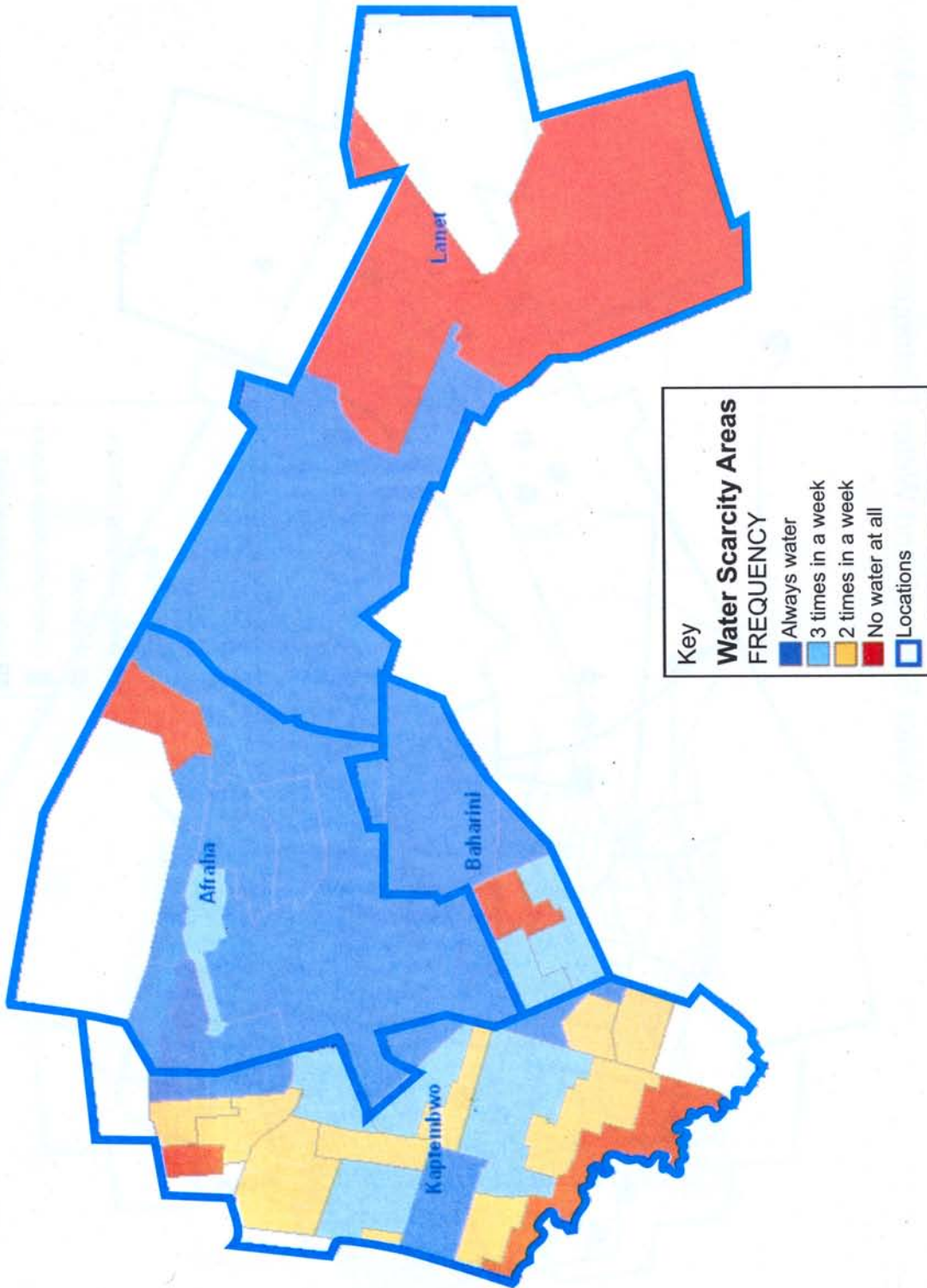


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### Availability of Water in Nakuru Municipality





**MINISTRY OF HEALTH AND MUNICIPAL COUNCIL OF NAKURU**  
with support from **World Health Organization**