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MUNICIPAL COUNCIL OF HOMA BAY

# FIVE-YEAR INTERGRATED SOLID WASTE MANAGEMENT STRATEGY 2010-2015

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The Development of an Integrated Solid Waste Management (ISWM) Strategy for the Municipal Council of Homa Bay (MCH) was commissioned by the United Nations- Habitat on behalf of MCH through funds provided by the same UN-Habitat under the Lake Victoria City Development Strategies (CDS).

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## **Acronyms**

AWEMAC-Africa Waste and Environment and Management Centre

CBD – Central Business District

CBOs – Community Based Organisations

CDS – City Development Strategies

DoE – Department of Environment

ELV-End of Live Vehicles

EMCA-Environmental Management and Co-ordination Act

ISWM – Integrated Solid Waste Management

KAM – Kenya Association of Manufacturers

LAs-Local Authorities

MCH – Municipal Council of Homa Bay

M&E- Monitoring and Evaluation

MoLG – Ministry of Local Government

NEMA - National Environment Management Authority

NEC- National Environment Committee

PCs – Private Companies

PESTEL-Political, Economic, Socio-cultural, Technological, Environmental and Legal

PEV-Post Election Violence

PH-Public Health

PPPs – Public Private Partnerships

SMEs – Small and Medium Scale Enterprises

SWM – Solid Waste Management

SWOT-Strengths, Weakness, Opportunities and Threats

UN-Habitat – United Nations Centre for Human Settlement

## **Definition of terms**

**Waste recycling industry:** Any business, institution or organization involved in the collection, transport, storage or processing (for purposes of export to countries with the appropriate infrastructure) of any solid waste for the purposes of recycling and recovery.

**Solid waste:** Any solid or semisolid garbage, refuse, or rubbish, sludge (from any facility involved in the treatment of air, wastewater, or water supply), and other discarded material, including any contained liquid or gaseous material, remaining from industrial, commercial, institutional activities and residential or community activities.

### **Solid Waste Management (SWM)**

A practice using several waste management techniques to manage and dispose of specific components of solid waste. Waste management techniques include avoidance, reduction, reuse, recycling, recovery, and disposal.

**Waste minimization:** The reduction, to the extent feasible, in the amount of solid waste generated prior to any treatment, storage, or disposal of the waste.

**Hospital waste:** Any cultures or stocks of infectious agents, human pathological wastes, human blood and blood products, used and unused sharps, certain animal wastes, certain isolation wastes and solid waste contaminated by any of the above biological wastes.

**SWM infrastructure:** All facilities (e.g. landfills, transfer stations, workshops), equipment (e.g. vehicles, rubbish bins, crushers), and public infrastructure (e.g. roads, electrical substations, SWM education programs) necessary for effective SWM.

**Hazardous waste:** A waste with properties that make it dangerous, or capable of having a harmful effect on human health and the environment. These wastes require special measures in handling and disposal due to their hazardous properties (e.g. toxicity, ecotoxicity, carcinogenicity, infectiousness, flammability, chemical reactivity) and are generally not suitable for direct disposal in a landfill.

## FOREWORD

Preventing and managing waste is at the heart of sustainable development. Waste means unnecessary depletion of natural resources, unnecessary costs and environmental damage that could be avoided. Sustainable waste management is about using resources more efficiently.

We currently produce around 4,000 tonnes of waste annually, and with the prospects of Homa Bay town becoming the headquarters of South Nyanza County, the quantities are expected to grow. Segregation at source is lacking. Similarly, due to population increase, the Council does not have the capacity to collect all the solid waste generated. The current by-laws don't have adequate provisions to deal with the ever growing problem of SWM. UN-Habitat has been of great assistance to the Council most notably in funding our SWM, water and sanitation activities. As a deliberate intervention, UN-Habitat in collaboration with MCH initiated the Integrated Solid Waste Management for Homa Bay, in pursuit of an effective and efficient ISWM strategy for the town. The Municipality has a very small dumping site which is already full and is located adjacent to the cemetery, residential areas and Homa Bay high school leading to conflicting land uses. Open dumping is the main method utilized at the dumping site.

This five year ISWM Strategy is a result of several participatory processes which began with extensive research that led to the understanding of the status of SWM in the town. It describes our perception of the town and our vision for its future with regard to ISWM. The existing micro enterprises, the informal sector activities of waste pickers, recyclers and community based initiatives have an important role to play in sustainable ISWM. The strategy borrows from local interventions that showcase the potential for replicating the local knowledge on sustainable waste management. It will provide a roadmap for what MCH will focus on for the next 5 years.

Finally, I would like to thank all those who participated in the formulation of this strategy. First my appreciation goes to UN-Habitat for playing a major role of initiating and facilitating the whole process by giving technical and financial support. I would also like thank the UN-Habitat consultant, Prof. Jacob Kibwage, town residents, the various municipal Departmental Heads and staff involved and other stakeholders for the roles they played. We are now heading in the right direction of Public Private Partnership (PPP) approach. We now have the vision and we must work hard towards making it a reality with determination. I hope to set-up a committee very soon to over-see the whole process of implementation, monitoring and evaluation to realise our set strategic goals and vision.

Mr. Casmiel Onyuka,

His Worship the Mayor of Homa Bay

## **EXECUTIVE SUMMARY**

Waste management is widely recognized as a major concern in MCH and for sustainable development in the Lake Victoria basin. Most of the solid wastes in the MCH remain uncollected. Resultant effects include spread of infectious diseases, blocked sewers, litter in the streets and pollution of Lake Victoria through crude dumping. With both direct and indirect linkages to economic development, waste materials represent wasted money, in terms of the original cost of the materials, the disposal and in its potential value as a recyclable and reusable resource.

It is widely recognized that the concept of ISWM is an approach to reach better, more sustainable solutions to these problems (Ogawa, H., 1997). The concept not only takes technical or financial-economic sustainability into account as in conventionally done, but it also includes socio-cultural, environmental, institutional and political aspects that influence overall sustainability of waste management. This document presents a strategic and integrated five year approach that aims to provide the MCH with practical ways, detailed intervention plans and financial requirements for addressing SWM in the town.

### **Strategic Areas**

The strategy is based around the following 12 major strategies:

- Recycling and composting programmes
- Storage facilities
- Collection Systems
- Transportation of waste from Collection to Disposal Points
- Waste disposal
- Handling of special/hazardous waste
- Environmental educational awareness
- Capacity building of stakeholders
- Private Public Partnerships (PPP)
- Legislative Framework on SWM
- Resource Mobilization
- MCH organizational set-up

### **Key Objectives**

The key relevant objectives for the implementation of the strategies above are:

- To establish recycling and recovery programmes
- To ensure adequate provision of storage facilities
- To establish efficient waste collection systems
- To ensure efficient transportation of wastes from collection to disposal points
- To ensure proper disposal of wastes
- To ensure proper handling and disposal of special/hazardous waste
- To ensure education and awareness on SWM issues
- To promote capacity building of stakeholders
- To strengthen PPP/ privatization
- To ensure enforcement and compliance with the legislative framework on SWM
- To mobilize resources for SWM
- To change the SWM organizational set-up

### **Key stakeholders**

The implementation of this strategic plan will be spearheaded by the MCH in close collaboration with various stakeholders. These stakeholders include the CBOs, NEMA, MSF, Ministry of Local Government, NEMA, Public Health Department, informal recycling groups, and general community members.

### **Monitoring and evaluation**

The indicators for monitoring and evaluation at all levels will include objectives, inputs, activities and outcomes. Outcome or impact indicators will measure the effect of activities in respect to the extent to which they meet the set objectives. This will be carried out after every six months.

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## **CHAPTER ONE: BACKGROUND OF HOMA BAY SWM PLANNING PROCESS**

### **1.1 Introduction**

Municipal Council of Homa Bay (MCH) stands on the shores of Lake Victoria, the second largest fresh water lake in the world. MCH covers an area of approximately 102.71 km<sup>2</sup> of land mass and 94.29 km<sup>2</sup> under the lake (UN-Habitat, 2006). The population of the municipality has been increasing and the current population is estimated at 90,000 people. As a result of this population growth without corresponding infrastructural growth, the urban environment is being degraded. The town generates an average of 11.7 tonnes of waste per day with only a small percentage collected (UN-Habitat, 2010-unpublished). This situation can be attributed to poor attitude towards SWM, lack of a comprehensive response to solid waste management and low capacity to offer SWM services. Similarly, waste is not viewed as a resource in the town. There are viable waste enterprises in the municipality which should be supported and a need to set up new ones.

### **1.2 Key Environmental problems**

#### **1.2.1 Poor Sanitation**

There are small numbers of sewer connections in the municipality which often experience blockages due to age, deposits of debris, poor pipe gradient or collapse and vandalism of manhole covers (UN-HABITAT 2006). The main type of sanitary facilities is the onsite pit latrines which are poorly constructed and are in unhygienic condition. Sanitation facilities are inadequate for the people that visit the town during the day. Removal of the filled septic tanks and pit latrines is done manually. This situation easily leads to poor sanitation, poor waste water disposal and surface/ ground water pollution. Subsequently, these may lead to serious risks of environmental pollution and public health impacts

#### **1.2.2 Poor Solid Waste Management**

MCH's capacity for collection, transportation and disposal of garbage is inadequate or non-existent in some areas like Shauri Yako settlements leaving piles of garbage and polythene scattered everywhere. The existing disposal site is full and located within a residential area, adjacent to a school and a cemetery which is not only a health hazard but creates conflicts with the residents. There is need for acquisition of a new dumping site and developing it into a sanitary landfill. Similarly open dumping is practiced leading to scattering of solid wastes haphazardly. Animals scavenge at the disposal site and the collection points posing serious security and health concerns. There is also a negative attitude of the community towards taking care of their own solid wastes. All these pose environmental and health hazards to the residents and the lake.



### **1.2.3 Poor Urban Drainage**

There is inadequate road and storm drainage network in the municipality with complete absence of proper drainage system in the low income settlements of *Shauri Yako* (UN-Habitat 2004). Storm water drainage facilities are not available in most of the urban roads except at the Central Business District (CBD). However, most of the drains in the residential estates have been covered with alluvium over the years.

### **1.2.4 Environmental degradation due to Stone & Gravel Mining**

Homa Bay town is surrounded by three hills, *Asego*, *Simenya* and *Got Rabuor*. Stone & Gravel mining takes place at the foot of these hills, as an income generating activity due to high levels of un-employment. These activities have led to soil erosion and deforestation. Quarry pits also pose a number of hazards to the people living nearby e.g. landslides and insect vector breeding grounds (NEMA, 2009).

### **1.2.5 Deforestation**

Majority of the residents in the municipality use wood fuel and charcoal as fuel source. The demand of these has led to deforestation both in the urban and peri-urban areas, for economic purposes. Cuttings down of trees have led to soil erosion and siltation of drainages into the Lake.

### **1.2.6. Water Pollution**

Water pollution from point and diffuse sources result in drainage into the lake leading to serious pollution of the lake. This also leads to high cost of treatment and potential risks of water borne diseases.

### **1.2.7 Land degradation**

Land degradation is as a result of land fragmentation and unplanned development, with major causes of land degradation including overgrazing, over cultivation, deforestation, droughts, and resource use.

### **1.2.8 Environmental awareness**

There is low public awareness on best environmental practices in MCH. There is also inadequate integration of environmental awareness into development planning.

## **1.3 Institutional Framework for SWM in MCH**

### **1.3.1 Regulation and Policy Environment**

SWM problems in the municipality are largely as a result of a lack waste management policy and framework that would aim at improving the standards, efficiency and coverage of waste from "Cradle-to-Grave". Before the enactment of Environmental Management and Coordination Act (EMCA) 1999, Local Authorities (LAs) had monopoly control over sanitation and SWM services under the Local Government Act (CAP 265) and Public Health Act (CAP 242). The former empowered LAs to establish and maintain Municipal Solid Waste (MSW) management services while the latter required them to provide the services. The Acts however neither set standards for the service nor require waste reduction or recycling. Similarly, the Acts do not classify waste into municipal, industrial or hazardous types or allocate responsibility over each type.

Considerable effort has been made with respect to policy and legal/regulatory framework for SWM since EMCA 1999 allocates considerable property rights as far as various aspects of environmental management are concerned. The most important of this is the right to clean environment allocated to the citizens. The citizens can now compel polluters, including indiscriminate waste dumpers, to pay for the damage or nuisance caused. In reality however, the cost of litigation (both in times of finance and time) makes it difficult for most of the citizens to exercise this right. Other important rights are those allocated to NEMA, e.g. with respect to licensing of waste disposal facilities. Institutional weaknesses in NEMA and other lead agencies also affect the effectiveness with which this right can be exercised.

The MCH, communities and CBOs operating in the town play only a small role in SWM because they are not integrated into the formal system. Policies on community based SWM service are lacking and there is need to emphasise development of environmental partnerships with stakeholders.

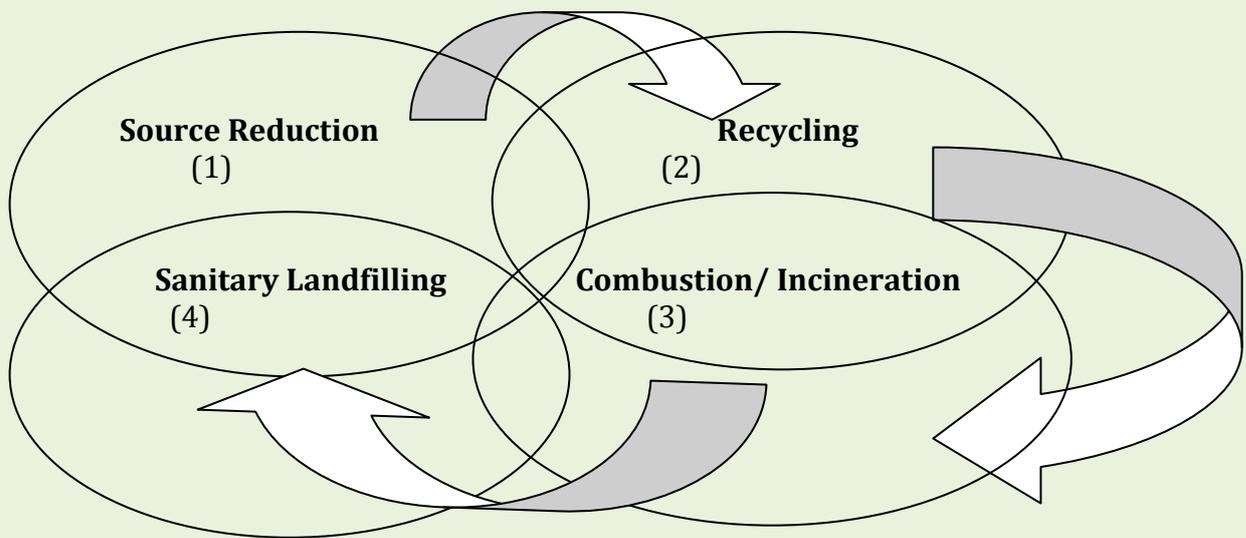
#### **1.4 The concept of Integrated Solid Waste Management (ISWM)**

The concept of ISWM is widely recognised as an approach to reach better, more sustainable solutions to solid waste problems (Kibwage, 2002). It refers to a waste management system that best suits the society, economy, and environment in a given location. The concept of ISWM not only takes technical or financial-economic sustainability into account as conventionally done, but also includes socio-cultural, environmental, institutional and political aspects that influence overall sustainability of waste management. ISWM also stands for a strategic and long term approach.

Waste management is seen in the ISWM approach as an equity and public health issue, which means that everybody has a right to a regular waste collection and proper sanitation. Consequently, this strategy aims at providing the MCH with a vision and methodology to address the problem of solid waste management in the town.

ISWM involves four levels.

- 1) **Source Reduction**, which is the reducing of the amount and/or the toxicity of waste we generate at source.
- 2) **Recycling**, this involves collecting, reprocessing, marketing and using materials that were once considered waste. This is commonly being referred as 5 Rs approach, i.e. Reduce, Recycle, and Re-Use, Re-Think and Re-sale.
- 3) **Waste Combustion** -this method reduces the bulk of municipal waste and can provide the added benefit of energy production.
- 4) A final level is **sanitary landfilling**, which is at the bottom of the hierarchy necessary to manage non-recyclable and non-combustible wastes (refer to Figure 1).



Source: Kibwage, 2002

Figure 1: An integrated solid waste management approach

## 1.5 The Pro-poor Integrated Solid Waste Management (ISWM) Strategy for MCH

### 1.5.1 Vision

*“An economically and environmentally sustainable Homa Bay town with a cost effective and self-sustaining ISWM system”*

### 1.5.2 Overall Goal

The overall goal for the Solid Waste Management Strategy, 2010-2015 is that:

MCH will adopt cost-effective and self-sustaining Solid Waste Management systems to protect the environment, public health and ensure sustainable urban economic growth.

#### The specific goals of this strategy are to:-

- Adopt measures to support financially sustainable SWM programmes
- Adopt an integrated approach which includes strategies for avoiding and reducing waste generation, waste reuse, recycling, composting, disposal, and waste collection
- Adopt appropriate legislation which are practical, effective, and culturally-sensitive
- Develop communication strategies that are culturally-sensitive to support SWM activities
- Enhance the capacity of the people and institutions to manage solid waste

- Establish policy, planning and monitoring systems that will ensure the development, implementation, and monitoring of solid waste management policies and strategies
- Develop environmental monitoring programs to protect the environment
- Adopt strategies for effective and compliant management of hazardous and special waste

### **1.5.3 Mission**

#### **1.5.4 Core values of MCH**

The core values of the MCH are;

- Good leadership
- Capacity building of our people and stakeholders
- Diversity is our strength
- Integrity in our operations and service delivery
- Recognition and Appreciation
- Communication

The vision, mission and core values of the MCH helped design its objectives and strategies. The same will be used in the implementation of this ISWM strategy. This will be through provision of a quality SWM service while promoting local economic developments, which support growth, equity and security.

#### **1.5.5 Guiding Principles**

Implementation of the ISWM strategy will be guided by the following principles and approaches:

- Active involvement, education, and communication with all stakeholders through a comprehensive, consultative and participatory approach to influence behaviour change
- Personal and corporate responsibility, including the user/polluter pays approach, the extended producer responsibility principle and appropriate economic incentives
- Sustainable approach to integrated solid waste management
- Holistic and precautionary approach, mindful of future demographic trends and technological advances

#### **1.5.6 Process of Formulation/Methodology**

This ISWM Strategy is a culmination of a number of processes which include Homa Bay Cities Development Strategies (CDS 2006-2010), Integrated Solid Waste Management Baseline survey (2010), and a 5-day Stakeholders Workshop with each process having major findings and strategic focus.

The inception phase produced a baseline survey through waste characterisation and quantification. The survey identified the composition and amounts of waste from various streams and sources (residential, commercial, industrial, healthcare, construction, etc). The data formed the basis for identifying the required management

systems covering policies, institutions, financing mechanisms, technology and stakeholders' roles at each operational stage.

Based on waste characterisation and quantification, and the efficiency rates of the prevailing waste management systems, the baseline survey provided the basis upon which realistic targets for ISWM are drawn up. These targets include coverage and efficiency of waste services, material recovery and cycling rates, treatment technologies and amount of residual waste to be safely disposed off.

The survey was aimed at gathering public perceptions on key challenges, opportunities and priorities for establishing an effective, efficient and ISWM model for the town. Through the workshop consultations, the stakeholders were enabled to:

- Articulate solid waste management problems and practices in MCH.
- Prioritise a range of enterprising SWM options i.e. waste recycling, organic composting, solid waste collection enterprises
- Propose and own sets of specific action plans with clearly defined time-frames, partner roles and key results/impacts.

### **1.5.7 Strategy Approach**

Key findings from above processes indicate that conventional methods have been the dominant models of solid waste collection and disposal in Homa Bay Municipality. However, there is a shift in SWM from the Council-led to multiple provision stakeholders. There is also a shift in the Local Authority from that of a sole implementer to a more facilitating role, which provides room for active involvement at grassroots in provision of services.

Consequently, this strategy presents a new provisioning termed Public Private Partnership (PPP) approach which will:-

- Allow multiple service providers operating at different zones and levels of SWM
- Facilitate use of different technologies for different SWM hierarchy
- Different SWM service charges and modes of payment and financing for zone and level
- Resource minimisation technologies to employment modern small-medium scale technologies and by both private and SMEs
- Development of intermediate collection and transportation points to reduce distance and cut transportation costs on private companies.

Based on the above information, the following chapter presents the key interventions of the 5-year ISWM Strategy for MCH.

### **1.5.8 Governance Structure of MCH**

The Council consists of six (6) elected councillors, two (2) nominated councillors including one (1) appointed public officer. The management of the MCH is structured into two wings. The first one is the Civic wing comprising of the councillors and headed by His Worship the Mayor who is elected from among the councillors. This wing has four (4) committees each headed by an elected councillor. The council runs its services

through these committees which make decisions on key issues. The four committees are:

- Environment and public health
- Education, housing and social services
- Finance, staff and general purpose committee
- Town planning and works

The second arm is the Executive wing with five administrative departments headed by the Town Clerk who is the Chief Executive. The current functional departments at MCH are:

- Clerks department
- Town Treasurers department
- Education and Social services department
- Engineering department
- Audit department which is a new department formerly under the town treasurer's department.

All environment matters including SWM are handled by the Environment and Public Health Committee. SWM is the responsibility of the Engineering department which is headed by the Assistant Town Engineer. The service is being provided directly by the Cleansing Section which is headed by a Cleansing Superintendent.

#### **1.5.9 Some milestones/achievements by MCH, CBOs and other stakeholders in the last 10 years**

The last ten years have seen major improvements in SWM issues within the MCH. This has been made possible through the establishment of local initiatives and entry of multi lateral organisations most notably the entry of UN-Habitat whose involvement has impacted most to these developments. Some of the achievements include:

- Initially, the Council had one tractor, but through a donation from UN-Habitat, the municipality has four tractors. This has improved collection efficiency especially within the CBD where collection is estimated at 80%. The UN agency also donated 2 dumpers for collection purposes.
- Due to the entry of donor agencies notably the UN-Habitat, there has been construction of transfer stations and introduction of skips( large storage containers)in strategic areas in the town.
- The last few years has seen an improvement of the road network and other infrastructure from Kisumu and Kisii/ Nairobi.
- There has been an establishment of a number of community groups (CBOs) dealing with garbage collection
- Sanitation has improved through the establishment of short-distance water collection points
- Capacity building workshops have been held in the town to sensitise people on SWM
- There is political will within the council unlike previous years to ensure sustainable SWM

## **CHAPTER TWO: SITUATIONAL ANALYSIS**

### **2.1 Introduction**

SWM is a major concern in Homa Bay town, a Lake Victoria CDS town. This was characterised by heaps of solid waste in both the residential and commercial areas. The amount and types of solid waste generated in the MCH varies greatly. Adequate storage, collection, transportation, disposal and recovery activities and services are beyond the resources of the local authority. The authority generally lacks the means to manage the rapidly growing amounts of solid waste. The following factors were responsible for the poor SWM service:

- Insufficient financial resources within municipal authority and poor mobilisation of resources.
- There are no viable economic incentives to encourage waste recycling, waste reduction and investments in safe disposal
- Lack of political and institutional support (weak by-laws) and low enforcement of the existing laws and regulations.
- The absence of a systematic approach on SWM to regulate both the generation points, facilitation of waste characterisation, encouraging of economic and sustainable management options (segregation, recycling/reusing) and lack of provision on ultimate disposal.
- Poor community attitudes towards environmental cleanliness shifting responsibility to the municipal authorities
- Lack of general awareness among the communities on sustainable SWM
- Inadequate SWM mechanisms at generation points including collection, storage and transfer logistics
- over-reliance on imported and inappropriate technology and equipments
- Inequality in service provision.

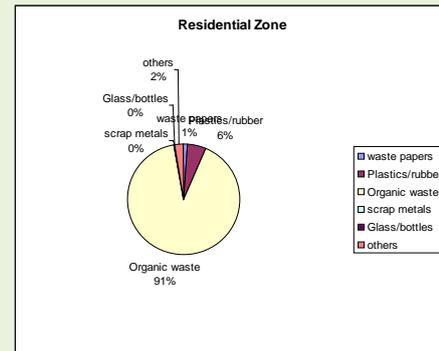
Solid waste generation is highest in the markets and commercial zones of the CBD. The Municipal Council provides transfer stations and skips for storage of this waste. The MCH owns four (4) tractors and two (2) dumpers for transporting this waste to the dumping site located 1.5 km away from the CBD. The site has an overall size of 1.6 hectares. This area has not been designed and the present dump therefore occupies 0.5 acre, (UN-Habitat 2005). Its proximity to residential areas allows easy access to people and animals which may be a health hazard. Individual households undertake most of their collection which is often disposed off in open spaces by hand e.g. by roadsides, alleys and undeveloped plots. This is because the municipality is unable to reach these areas.

### **2.2 Description of the current situation**

#### **2.2.1 Solid Waste Characteristics**

The rate at which waste is generated and its composition, are the principal parameters which are essential for the planning of any refuse management service. The quantity of any refuse produced by households, commercial sector, institutions, markets and construction sites was estimated through the application of field observations and

direct measurements at their sources. Composition analysis was also undertaken to establish the percentage of organic wastes, metals, plastic/rubber, glass/bottles, waste papers and other forms of mixed wastes. The pie chart below shows the percentage composition of household wastes.



Organic wastes comprised of 91%, plastic and rubber 6%, waste papers 1% while others had 2%. Glass/bottles and scrap metals were notably absent from the household wastes. The density of household wastes was found to be 56.4 Kgs/M<sup>3</sup>. Industrial wastes mainly originated from the Capital Fish (K) LTD, medical wastes from the Homa Bay District Hospital, commercial wastes from markets, hotels & restaurants, supermarkets, tailoring shops, butcheries and the bus park.

### 2.2.2 Solid Waste Management systems

Solid waste management (SWM) systems involve the SWM procedures adopted in SWM right from storage, collection, transport and disposal.

#### a) Storage and collection Systems

Waste storage facilities used by Homabay residents are standard containers and unstandardized containers. Standard containers are used for secondary (or communal) storage of the domestic waste and are supplied by the MCH or CBOs. Standard containers used in Homa Bay are dustbins, Plastic and galvanized bins, Bulk Containers. Unstandardized containers used included old basins, carton-boxes, sacks and plastic bags. These were mainly used because of insufficiency, obsolescence of containers caused by the MCH which had the obligation of providing refuse receptacles to householders.

Communal collection; Door-to-door or House-to-house collection or 'no collection' were the main collection methods used in MCH. Communal Collection/Use of Transfer Stations involved residents discharging their wastes at predetermined locations containing secondary storage facilities. Almost everywhere, the containers at communal collection points were sometimes overfilled and refuse was thrown around them; were exposed to all types of scavengers as well as bad odour. In Door-to-Door collection the collection vessels were placed as close as possible to the entrance of the house, and the individual household containers were picked by a collector and emptied into the vessel. Similarly 'no Collection' was a common system used in a few some low-density and in all high-density residential areas.



#### b) Transportation of waste

The common modes of transportation used were: vehicles and manual transport. Refuse-Vehicle Types under Operation in Homa Bay are; The Ndume Little Pick-ups (Dumpers), High Tipping Container Pick up Trailers (Tractors) and the main tractor. Manual transport involved use of wheelbarrows to transport wastes to the transfer stations which were located strategically at various points within the municipality. This was done by either the municipal workers as well as staff of CBOs dealing with SWM.



### c) Waste Disposal Methods

Approximately 75% of wastes from MCH were disposed through open dumping at the disposal site. MCH has only one area set aside for the disposal of all types of solid wastes. The site has a fence but no gate and its proximity to residential areas allows easy access to people and animals, which might lead to transmission of diseases. The dump site is already full hence its life span is currently 0 years. Hospital waste is incinerated. There are only two incinerators in Homabay municipality one at Homabay district hospital and one at St.Paul's mission health centre. Open burning is used by low and high income residential areas and learning institutions. Similarly, there were placenta pits at the two hospitals surveyed in Homabay municipality for disposal of placentas.



### 2.2.3 Solid Waste Recovery and recycling Practices

Three types of actors are involved in solid waste recovery activities in MCH; the waste pickers, waste dealers and the Jua-Kali recycling industry. Waste pickers operate in the commercial, residential and industrial zones obtaining all kinds of waste materials from open spaces, roadsides, communal dumps, dustbins, skips and other waste receptacles. Waste dealers are interested most in plastic & scrap metal items and act as brokers i.e. a linkage between the waste pickers and Jua-kali artisans and other Waste Recycling Industries (WRI's) in Nairobi and other market outlets.



There is no formal WRI in the town except the Jua-Kali workshops operating on a small scale basis and manufacturing a wide range of consumer end-products from the different waste materials. It is only in the slaughter house that the manure waste is recycled into biogas/methane and sometimes used as compost. There was also organic recycling of fish bones and fish skin from the Capital Fish industry in Mgongo Wazi open market.

It can be observed that there are many opportunities of setting-up WRIs in MCH which can benefit from the varied types and quantities of waste generated and the availability of cheap labour within the municipality's informal sector

#### **2.2.4 Homa Bay SWM Arrangements and Legal framework**

There are three forms of SWM service arrangements in MCH; first the MCH provides SWM services directly using employees. A second arrangement was the private arrangement which was largely independent of the municipal arrangement. In this case, recipients paid their collectors (CBOs) directly. There was a third service arrangement that revolved around waste dealers and recyclers.

There are many environmental risks related to pollution caused by unsanitary dumping of wastes, therefore the role of legislation should basically provide a framework for organizational decisions in MCH. Laws and regulations should be designed and enforced to protect the health and integrity of the delicate ecosystem and the human populations. MCH's service delivery is affected by the Central Government legislations beyond its control e.g. the Local Government Act, the Public Health Act, NEMA regulations etc. This situation denies MCH the liberty to choose its SWM programs. A good example is the 1984 LG Act which makes it difficult for the MCH to hire and fire its own employees. Similarly, there are no by-laws to facilitate solid waste recovery enterprises in the town. These limitations for the MCH have led to institutionalization of corruption and nepotism in the council and understaffing problems with incompetent and unskilled staff thereby affecting service delivery.

Under such conditions, non compliance has been common due to lack of awareness and carefree attitudes. The situation is worsened with limited human and financial capacity to enforce legislation and an uncoordinated enforcement and compliance by NEMA and the Council without clear defined roles and responsibilities.

#### **2.2.5 Role of Community Based Organizations (CBOs) in Provision of Solid Waste Management Services**

In the municipality, there were ten (10) CBOs but there were only five (5) active ones. The five active CBOs that were operational during the survey period were: "Asedhwa" Women Group, Environmental Watch Programme, WOKAN Women Group, Homa Bay "Jua kali" Women Association and Town Hawkers. These CBOs supplied dust bins to only clients who agree to pay the negotiated collection fee which ranges between Kshs 150-300 at the end of every month.

The CBOs utilized the door-to-door collection systems and used wheel barrows in transportation of wastes from their clients to the transfer stations, skip or open space (for crude dumping). None of sampled CBOs transfer waste directly to the dumping site.

CBOs provide employment to many people; for example, WOKAN Women Group has 13 permanent and 2 casual employees. Most CBOs were faced with lack of enough finances and personal protective equipments such as gloves and other equipments.

In conclusion, CBOs provides better services than those provided by the MCH because they are directly answerable to their clients. Proper partnership between CBOs and MCH can increase the efficiency of solid waste management services to the public.

### 2.3 Internal and external analysis

One of the most critical activities in strategic planning is to analyse the environment within which an institution operates. One popular way of doing this is to understand the Strengths, Weaknesses, Opportunities, and Threats that the institution has. It defines the relationship between internal and external appraisals. The external appraisals (Opportunities and Threats) are those conditions that have a broad rather than direct impact on an organisation. The internal appraisal (Strengths and Weaknesses) focus on human resources, technology, structure, culture or traditions, processes, physical facilities, policies and other internal conditions that directly affect an organisation. For this analysis, both SWOT and PESTEL analysis methods were used.

**Table 1: Internal and external analysis**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Empowered citizens with knowledge on SWM</li> <li>• The municipality councillors have excellent organisational skills through which a vibrant campaigns can be initiated to mobilise and sensitise residents on SWM issues</li> <li>• The council has a fair image from the public when it comes to support</li> <li>• Physical assets, infrastructure and equipments e.g. skips, tractors, existing transfer stations, dumpers, and various types of receptacles and</li> <li>• Viability of good road network</li> <li>• Budgetary allocations e.g. to buy a rear compactor for solid waste disposal, mapping for erection of transfer stations have already been done</li> <li>• Existence of active CBOs who engage in private waste collection services</li> <li>• Existence of drafted SWM By-laws, &amp; relevant Acts e.g. the NEMA Act, Public Health Act, and Local Government Acts to ensure proper SWM</li> <li>• Presence of development partners interested in provision of SWM services e.g. UN-habitat</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of Public-Private Partnerships</li> <li>• False promises by the MCH to CBOs and other groups involved in SWM</li> <li>• Limited funding opportunities</li> <li>• Inadequate SWM tools and equipments</li> <li>• Impassive supervision of SWM staff</li> <li>• Lack of enforcement and implementation of existing by-laws and other regulations</li> <li>• Weak MCH administrative structure, personnel roles are not very clear</li> <li>• SWM budgeting is not being emphasized</li> <li>• Inadequate training of personnel in SWM</li> <li>• Lack of staff capacity in the social welfare department to undertake social action programs promoting ISWM systems</li> <li>• Embargo on new staff employment and inadequate number of employees</li> <li>• Water &amp; Sanitation systems are being addressed</li> <li>• Poor frequency in garbage collection</li> <li>• Low Attitude of residents towards SWM issue</li> <li>• Roaming animals, in most cases, animal bodies are littered all over the town</li> <li>• Dumping site not managed well, not fenced or protected</li> <li>• Relevant government departments work in</li> </ul>

<ul style="list-style-type: none"> <li>• Availability of municipal enforcement <i>askaris</i> and other regulation and enforcement agencies</li> <li>• Institutional framework; There is the District Environment Committee to guide in implementation of SWM issues; There is technical support from various institutions and the government</li> <li>• The MCH owns the current dumping site. Land can be sold and proceeds used to purchase a new site</li> <li>• Good will of the people</li> <li>• Government institutions and other institutional frameworks e.g. DEC, and various tools e.g. Solid Waste Management Regulations 2006 offer technical support on SWM issues</li> </ul>	<p>isolation</p> <ul style="list-style-type: none"> <li>• The council is perceived as being ‘thoracic’ when administering enforcements</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• The Ministry of Public Works has equipments and machinery which can be effectively utilised in SWM services</li> <li>• Different types &amp; quantities of waste which can be reused and/or recycled</li> <li>• Good will and willingness of people to separate waste at source</li> <li>• Good security situation in Homa Bay</li> <li>• Presence of international and local investors such as Capital Fish, financial and business institutions</li> <li>• current dumpsite can be reclaimed</li> <li>• Presence of Government Departmental offices e.g. NEMA</li> <li>• Cultivated donor confidence</li> <li>• Success stories on SWM from other towns. And linkages with towns with similar programmes</li> <li>• Supportive political leadership with a development agenda and strong community cohesiveness</li> <li>• Interest in environmental issues in the Lake Victoria Basin by development partners</li> <li>• Prime minister comes from this region where he enjoys near fanatical support</li> <li>• Various environmental funds e.g. the Global Environmental Facility fund (GEF), UNEP, and devolved government funding like CDF, LATF</li> <li>• Local initiatives e.g. <i>Kazi kwa vijana</i></li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• With the passage of the new constitution, the Council can be dissolved.</li> <li>• Residents have a negative attitude towards SWM and rate payment.</li> <li>• Natural calamities e.g. floods, drought, climate change etc</li> <li>• Poor planning and lack of a focused development agenda denying locals an opportunity to invest in SWM</li> <li>• Lack of capacity and technological development to handle waste</li> <li>• Inadequate dumping space in comparison with waste generated</li> <li>• Lack of finances and other resources for efficient SWM provision</li> <li>• With the passage of the new constitution, all public land will be under the commission of land. This will create new issues within the council on land related matters</li> <li>• Population increase is fast compared with the capacity for service provision</li> <li>• HIV/AIDS is a threat to the MCH e.g. on monies spent on HIV/AIDS programmes, e.g. providing care and support to the infected staff and absenteeism</li> <li>• Impunity e.g. resistance towards improved waste generation and disposal mechanisms from entrenched vested interests</li> <li>• Prevalent perception of NGOs/CBOs as being rivals to the Government and the local authority in competing for donor funded</li> </ul>

<p>project</p> <ul style="list-style-type: none"> <li>• The Multi-Stakeholders Forum (MSF) is already established on the ground</li> <li>• Adequate and cheap manpower high number of institutions of learning in the region, availability of human capital Region endowed with a pool of professionals and young graduates, research opportunities in Lake Victoria Environment</li> <li>• Central government and its agencies like NEMA and the municipality already have policies and regulations on SWM</li> <li>• The town is located in a strategic area</li> <li>• The town is growing very fast &amp; with the passage of the new constitution, it going to be the headquarters of South Nyanza County</li> <li>• Periodical investment opportunity reports by the District Development Office have identified potential investment opportunities in SWM</li> <li>• Shared SWM knowledge transfer through technology, e.g. Diaspora, other local authorities both local and abroad</li> <li>• Government policies e.g. vision 2030, national development policy, national environment policy</li> </ul>	<p>resources</p> <ul style="list-style-type: none"> <li>• Land tenure practices encouraging sub-division without planning may lead to conflicting land policies</li> <li>• Competition from other regional towns and cities with similar programs</li> <li>• Shortfalls of SWM legislations,</li> <li>• Quarrying, harvesting stones for building</li> <li>• Instability of the coalition government, bureaucracy in decision making process, corruption and poor record keeping</li> <li>• Unrealistic demands by donor agencies leading to conflicting local interests</li> <li>• Ignorance on environmental issues</li> <li>• High levels of unemployment and poverty</li> <li>• Undeveloped infrastructure</li> <li>• Slow pace of political reform, likelihood of political interference and meddling by powerful local forces, corruption in national and local governments.</li> </ul>
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## 2.4 Stakeholders Involved in SWM in Homa Bay

In Homa Bay, there exists a wide range of individuals, groups and organisations currently faced with the challenge of SWM. These stakeholders include the Central Government, the MCH, informal groups, Community Based Organisations (CBOs) and individuals.

### 2.4.1 Central Government

The Central Government is responsible for establishing the institutional and legal framework for SWM. The Ministry of Local Government has high power of MCH, which limits the council's ability to make independent decisions with regard to spending priorities and policies. In addition the National Environmental Council (NEC) formulates national environmental policies and priorities while the National Environmental Management Authority (NEMA) is the government implementing agency with a coordinating, guiding and outreach role. The Government is also unable to adequately fund the council's programmes. However, there are opportunities like linkage to partners, provision of political goodwill, and the holder of the current policy on environment and food policy.

#### **2.4.2 The Municipal Council of Homa Bay**

The MCH is generally responsible for the provision of solid waste collection and disposal services. It is the legal owner of waste once it is collected or put out for collection. Besides SWM, the municipal council is also responsible for the provision of the entire range of infrastructure and social services. The vital Department of Environment is yet to be established to take up the responsibilities of SWM from the Town Engineer's Department. The present organisational structure therefore gives little leverage to undertake effective SWM in the municipality as a result of weak planning and development control framework and inadequate capacity to enforce environmental regulations. Institutional norms are weak and unsupportive of environmental planning and sanitation. As a result, the authority generally lacks the means to manage the rapidly growing amounts of solid waste.

#### **2.4.3 Private Companies/CBOs**

As service suppliers, CBOs are primarily interested in earning a return in their investment by selling waste collection, transfer, treatment, recycling and/or disposal services. The CBOs utilizes the door-to-door collection systems through provision of dustbins to their clients to avoid scattering of wastes in the clients premises. However, they lack equipments and only use wheelbarrows in transportation of wastes from their clients to the transfer stations, skip or open space (for crude dumping or burning). None of the CBOs transferred their collection to the dumping site. The CBOs are contracted directly by individual households, institutions and/or restaurants. They are perceived competitors for donor funding and potential conflicts in service provision.

Constraints to the CBOs included:

- Lack of properly laid down institutional procedures followed by each CBO interested in provision of SWM services.
- Lack and insufficient collection, storage and transport equipments and facilities
- CBOs were not legally protected
- Lack of enough finance

#### **2.4.4 The Informal Sector**

The informal private sector carried out unregulated waste activities. These included small scale entrepreneurs and waste salvagers. These groups undertake waste collection and small scale recycling as a source of income and a strategy to improve their surrounding environmental health situation.

The street waste salvagers operate in the commercial and residential zones, obtaining waste material from open spaces, communal dumps, dustbins and other waste receptacles. Waste dealers also acted as brokers and thus linkages between the waste pickers and SMEs within the town and beyond and also Waste Recycling Industries in Nairobi. Therefore, waste can be a source of livelihood to a large number of people.

#### **2.4.6 Individual Households**

Individual households are interested in receiving effective and dependable waste collection services at reasonably low price. However, in low income a residential area like Shauri Yako, there is no collection leading to a situation where solid waste is

commonly dumped onto nearby open spaces, along roads and pathways, into drains or dug holes within their compounds. Individuals have a negative attitude towards SWM, with a perception that it is the Municipality's duty to deal with solid waste.

#### **2.4.5 Local Community**

The local community has high interests in SWM in that they want to live in a clean environment. They however have little power in policy formulation and strategy direction. The local community poses a number of threats which include potential for local politics to negatively affect service provision, perceived expectations, realised benefits and direct competition.

#### **2.4.6 Donors and Financiers**

Potential donors and other financiers are expected to have high interests in SWM of the Lake Victoria Basin. They have high powers because of their ability to provide funding and influence policies. The opportunities they provide include their ability to provide resources, ability to influence thinking and policies, potential to optimise utilisation of local natural resources and ability to promote a good image. The threats emanating from this category of stakeholders include tarnishing of the Council's name especially after bad experiences, ability to cripple projects by withholding funding and potential over-dependency of funding.

## **CHAPTER THREE: STRATEGIC ISSUES, STRATEGIC OBJECTIVES AND KEY ACTIONS**

### **3.1 Introduction**

This chapter deals with key strategic areas to be addressed. Strategic issues are key challenges facing an organisation derived from environmental appraisal. It discusses the overall aim and strategic objectives of the strategy as well as a 5-year intervention action plan to improve existing waste collection, transportation and disposal systems. This strategic plan gives the ways these objectives will be accomplished. It makes use of the PPP to enhance the technical, institutional, social and financial issues related to SWM.

The overall aim of the SWM strategy for MCH is: To provide an efficient and sustainable solid waste management system through the creation of an enabling environment for multi stakeholder participation and adoption of an ISWM strategy for the town.

In pursuit of this, the key strategic issues are outlined below;

### **3.2 Recycling programmes**

Recovery and re-use of solid wastes is a major step in reducing quantities of waste ending up in the landfill (Lund 1984; UNCHS, 1994). The predominant waste type in Homa Bay is organic waste with significant portions of paper and plastic waste. The large amounts of organic waste indicate the necessity of frequent collection and immediate composting. The significant amount of paper and cellulose material, plastics and rubber, and metals indicate that the waste can be recycled or reused.

#### ***Key strategic objective 1: To establish recycling and recovery programmes***

The key actions to help realize this objective are;

- Establishment of recycling micro-industries/ enterprises on:-
  - Plastics (to make plastics poles, blocks, household items, shredding, etc)
  - Organic Materials
  - Bones/ horns
  - Fish waste/ Mgongo wazi
  - Scrap metals
  - Glass/ bottles
  - Waste papers
- Training of youths on recycling technologies
- Separation of waste at source to reduce the amount disposed at the dumpsite/ to encourage recycling in the town.

### **3.3 Storage facilities**

Storage of solid waste is a major challenge in Homa bay town. Storage facilities are mainly provided by CBOs and MCH. However due to financial constraints and political issues such as the 2007 Post Election Violence (PEV), there has been inadequacies in the supply of storage facilities. There is need for provision of adequate storage material by replacing those destroyed during the above violence not only in the CBD area but also in the estates. The bins should also be compatible with planned recycling systems.

#### ***Key strategic objective 2: To ensure adequate provision of storage facilities***

The key actions to help realize this objective are;

- Replacement and repair of storage containers that were destroyed during the 2007 post-election violence
- Adding of more standard storage containers because the town is growing

### **3.4 Collection Systems**

The proportion of solid waste generated to that collected is very low in the MCH. This leads to indiscriminate dumping on either private property or public open spaces. There is also inequality in service delivery where the middle income areas of the town are well serviced by local CBOs, while high and low income households are not serviced. The collection efficiency is also hampered by the inappropriate waste container design. Households dispose their waste without plastic bags slowing down the collection process. There is non-uniform and biased distribution of collection containers.

#### ***Key strategic objective 3: To establish efficient waste collection systems***

The key actions to help realize this objective are;

- Establish more and well planned transfer stations
- Increase the capacity of the skips
- Improve on management of transfer stations
- Redesigning of the waste collection sites i.e. the transfer stations to be user friendly.
- Research on the reasons for failure of some constructed transfer stations.
- More skips should be put in place
- Repossessed plots by MCH can be used as transfer stations
- There should be a weekly schedule for collection of wastes from the skips

### **3.5 Transportation of waste from Collection to Disposal Points**

Transportation of wastes is a strategic area to be addressed because of poor road network and infrastructure in the town. Accessibility to the dumping site is a major challenge especially during rainy season due to lack of an all weather road. The vehicles currently in operation are under utilized. Poor planning of the town also hampers

accessibility especially in informal settlements hence non-accessibility of these areas by the transportation vehicles leaving wastes un-collected.

***Key strategic objective 4: To ensure efficient transportation of wastes from collection to disposal points***

The key actions to help realize this objective are;

- Improve road networks for easy waste collection and disposal
- Repair of the existing transport facilities, e.g. the dumper, etc through a good repair and servicing system.
- Acquire new transport and disposal equipment, e.g. Compactor vehicles, etc.
- In the long term(2015) there should be compulsory acquisition of land in the slums in order to develop access roads
- Town planning department to immediately do the Planning to make residents aware

### **3.6 Waste disposal**

The most common methods of waste disposal in Homa Bay are: open dumping, open burning and incineration of medical waste. Open dumping/unsanitary land filling is the most preferred method. The dumpsite is located at the slopes of *Asego* hill west of the town centre. It is sandwiched between *Arujo* estate to the north, *Sofia* estate to the east, Homa Bay Cemetery and Homa Bay High School to the south and public works/water treatment yards to the west (UN-Habitat 2005).

There is no control on dumping at the site and composite mixture of solid wastes (including garbage, commercial wastes and ashes) are dumped haphazardly within the site and outside the boundaries without due regard to surface storm water flow, wind transport of particulate matter and pollution potential to sources of water. Due to dismal separation of waste at source and communal collection points, the area around the site is littered with all types of waste, ranging from hazardous medical waste to an assortment of paper, plastic, metal and biodegradable materials. The site is not fenced and therefore not protected from intrusion by people and animals. The site is already full.

***Key strategic objective 5: To ensure proper disposal of wastes***

The key actions to help realize this objective are;

- Establishment of a new dumping site/ relocation of the current dumpsite
- Compact the existing waste at the dumpsite in the short term
- Re-filling of quarries from the current road projects
- MCH should start identifying new sites for the dumping site and start negotiations with the contractors and owners of the quarries to reserve the quarries for disposal
- Proper disposal of construction waste which at the moment is haphazard

- MCH to establish a commercial incinerator at the dumping site to handle hazardous waste and serve the South Nyanza region.

### **3.7 Handling of special/hazardous waste**

Handling of special/hazardous waste is a strategic issue because of the incapacity and lack of knowledge of generators of this category of wastes to properly handle their wastes. Hazardous waste such as medical waste, batteries, used oil, dry cells etc are increasing becoming a big challenge with the growth and development of Homa Bay town. There is only one standard incinerator at Homa bay district hospital serving the entire town.

#### ***Key strategic objective 6: To ensure proper handling and disposal of special/hazardous waste***

The key actions to help realize this objective are;

- Proper handling and disposal of various categories of hazardous/special waste e.g. Dead animals, e-waste recovery plant in the town, Oil from *Jua kali* garages, *Mgongo wazi* (in a more sanitary way), ELVs ,Hospital wastes, Unclaimed bodies, Body parts e.t.c
- Regular monitoring by the public health department

### **3.8 Environmental educational awareness**

The lack of training, education and awareness coupled with the negative attitude and lack of cooperation from the community on SWM is a major constraint towards achieving sustainable SWM. Therefore, awareness and sensitisation program is imperative for sustainable SWM service provision. Such a program should focus on a number of areas including: incorporation of environmental education in the school curriculum; waste separation at source, neighbourhood clean ups, demonstration and/or pilot SWM projects, community participation in SWM initiatives.

#### ***Key strategic objective 7: To ensure education and awareness on SWM issues***

The key actions to help realize this objective are;

- Through the school system from early childhood
- Use all local communication systems / media to sensitize the public on good practices on waste disposal e.g. using even funeral meetings, church sessions, radio stations e.g. Radio Lake Victoria(RLV),Ramogi etc
- Chief barazas; Door to door campaigns to create awareness and education on SWM
- Collective responsibility on environmental awareness by all stakeholders
- Youth groups to act plays on sensitization on SWM

- sensitization of women on the need for proper disposal of sanitary towels; Households and schools to be targeted in sensitization condoms ;parents at the household level need to sensitize

### **3.9 Capacity building of stakeholders**

The lack of training and sensitization on SWM by major stakeholders in Homa Bay is a major constraint. There need to build capacities of CBOs, MCH, the informal sector and the local community on environmental management especially SWM; Public awareness education on SWM issues i.e. by-laws, community involvement e.t.c.

#### ***Key strategic objective 8: To promote capacity building of stakeholders***

The key actions to help realize this objective are;

- Conduct Trainings on new SWM technologies
- Conduct workshops for stakeholders

### **3.10 Private Public Partnerships (PPP)**

ISWM necessitates the need to involve all the relevant stakeholders in SWM. The MCH should join hands with the existing CBOs and other stakeholders in collection and disposal of solid wastes. This can be achieved through financial and technical support to the CBOs and other private waste collectors.

#### ***Key strategic objective 9: To strengthen PPP/ privatization***

The key actions to help realize this objective are;

- Motivate CBOs (Distribution of T-shirts, milk, etc during clean-up activities)
- Joint meetings with private sector to have presentations on solid wastes
- There is need for budgeting to strengthen PPP
- Identify more funding sources to facilitate PPP
- Support for CBOs and private entities in SWM
- Develop a PPP policy to define dealings with different stakeholders e.g. youths and CBOs.

### **3.11 Legislative Framework on SWM**

There is a general lack of enforcement and compliance with the legal framework on SWM. Environmental Management and Co-ordination (waste management) regulations 2006 gives provisions for proper SWM, however, improper SWM is rampant right from generation to final disposal. There is therefore a need to come up with structures to ensure enforcement and compliance with these regulations. Similarly there is need for the municipality to enact by-laws discouraging the use of certain categories of waste such as plastic waste.

***Key strategic objective10: To ensure enforcement and compliance with the legislative framework on SWM***

The key actions to help realize this objective are;

- Enforce SWM by-laws
- Enact by-laws to discourage the use of plastic bags
- Categorize the waste producers (carpenters, cereal sellers, etc) rather than operating without control
- Discipline and change of attitude
- Look at the current by-laws and fill in the gaps
- Various lead agencies and relevant stakeholders to be made aware on SWM regulations
- MCH to work together with the PH office in licensing of traders to ensure Public Health regulations are followed
- Harmonization of all activities involving laws on SWM at the local level
- Joint monitoring committees drawn from different stakeholders
- MCH should have a Public Health department; Department of environment to monitor on issues of compliance with legislation

### **3.12 Resource Mobilization**

Resource mobilisation is important to facilitate the implementation of this strategic plan. A strategic approach to resource mobilisation entails moving from short term, reactive resource mobilisation to long term mobilisation of five years. It also means planning operational strategy based on the income streams that the council has.

A Resource Mobilisation Strategy (RMS) tandem with the overall Strategic Plan will be developed in order to attract more income, reduce dependency on traditional sources, reduce future donor dependence and develop a roadmap to self financing, diversify the funding base, increase unrestricted funds, ensure sustainability of the council, employ and retain quality and experienced staff and acquire more physical assets. The fundraising strategy needs will be based on the vision, mission, core values, strategic objectives and targets. All stakeholders are expected to participate in mobilising resources required to achieve the objective targets.

***Key strategic objective 11: To mobilize resources for SWM***

The key actions to help realize this objective are;

- Devolved funds from the government e.g. CDF
- Networking with international communities (UN HABITAT, SIDA, USAID)
- Fundraising through *harambees*
- Local authorities through LAVLARC
- Stakeholders to put some of the activities in their budgetary allocations
- Environmental funds e.g. GEF and other bi-lateral funding in programmes in this region e.g. LVEMP

- MCH to have a budget line for SWM
- MCH to start charging fees for garbage collection
- Develop income generating projects that are self-sustainable and aimed at raising revenue.
- Technical waste committee comprising of financial institutions, investors
- Bodies which can give ideas to be incorporated
- Local investors with businesses in town to be brought in through corporate social responsibility
- MCH to charge the individuals and CBOs dumping at the skips at the transfer stations to cover for transportation costs to the dumping site
- MCH to Sell of recyclable materials especially organic wastes
- Brand the council to be attractive to donors
- Borrowing from financial institutions.
- Privatisation of SWM services to Private Enterprises

### **3.13 MCH organizational set-up**

The reasons for poor SWM service provision in the MCH can be attributed to lack of proper planning and systematic approach by the Engineer's Department (the department responsible for SWM in the MCH). The SWM problems also can be attributed to lack of political and institutional support. Consequently, SWM issues are not prioritized by the council in the allocation of funds for purchase of facilities, equipments and for operational costs. There is therefore a need to establish the Department of Environment which will be responsible for the provision of SWM services.

#### ***Key strategic objective 12: To change the SWM organizational set-up***

The key actions to help realize this objective are;

- Establish the Department of Environment and recruit the technical staff e.g. the Director of Environment
- Capacity building of new staff
- Net working with other councils

## **CHAPTER FOUR: IMPLEMENTATION MATRIX**

This chapter outlines the action plan matrix for the specific strategic objectives in this strategic plan for the period 2010-2015. Under each strategic objective, prioritized activities have been listed with their performance indicators and measurable targets. The matrix apportions responsibility to key stakeholders within a given time frame. The general assumption is that the Kenyan Government, development partners, and residents will be key players of the implementation process of the strategy to realise its vision 2015. This vision is mainstreamed with the Kenyan Government vision 2030.

**Table 2: Implementation Matrix**

Objective/ Priority area	Key Actions	Responsibilities	Time Frame	Indicative Budget (Kshs Millions)				
				2010/11	2011/12	2012/13	2013/14	2014/15
1.Establishment of recycling programs	-Establishment of recycling plants/ micro-industries <ul style="list-style-type: none"> <li>• Plastics (plastics poles, blocks, etc)</li> <li>• Organic Materials</li> <li>• Bones/ horns</li> <li>• Fish waste/ <i>Mgongo wazi</i></li> <li>• Scrap metals</li> <li>• Glass/ bottles</li> <li>• Waste papers</li> </ul> -Training of youths on recycling technologies -Separation of waste at source to reduce the amount disposed at the dumpsite/ to encourage recycling in the town	-MCH in partnership with various stakeholders; Town Engineer -Proposed Director of Environment	-Long term	1	2.5	5.0	7.5	10.0

Objective/ Priority area	Key Actions	Responsibilities	Time Frame	Indicative Budget (Kshs Millions)				
				2010/11	2011/12	2012/13	2013/14	2014/15
2. Improve storage facilities	<ul style="list-style-type: none"> <li>-Replacement and repair of storage containers that were destroyed during the 2007 post-election violence</li> <li>-Adding of more storage containers because the town is developing</li> </ul>	<ul style="list-style-type: none"> <li>- Waste generators</li> <li>- MCH-cleansing section in conjunction with various stakeholders</li> </ul>	-Mid-term (2 years)	0.5	0.5	0.5	0.5	0.5
3.Improve waste collection systems	<ul style="list-style-type: none"> <li>-Establish well planned more transfer stations</li> <li>-Increase the capacity and number of the skips</li> <li>-Improve on management of transfer stations</li> <li>-Redesigning of the waste collection sites i.e. the transfer stations to be user friendly</li> <li>- Research on the reasons for failure of the constructed transfer stations</li> <li>-Repossessed plots by MCH can be used as transfer stations</li> <li>-There should be a weekly schedule for collection of wastes from the skips</li> </ul>	<ul style="list-style-type: none"> <li>- MCH; Town planner, Cleansing department</li> </ul>	-Mid-term (2 years)	0.5	1.0	2.0	3.0	5.0

Objective/ Priority area	Key Actions	Responsibilities	Time Frame	Indicative Budget (Kshs Millions)				
				2010/11	2011/12	2012/13	2013/14	2014/15
4. Improve on waste transportation from collection to disposal points	<ul style="list-style-type: none"> <li>-Improve road networks for easy waste collection and disposal</li> <li>-Repair of the existing transport facilities, e.g. the dumper, etc through a good repair and servicing system.</li> <li>-Acquire new transport and disposal equipment, e.g. Compactor vehicles, etc.</li> <li>-In the long term(2015) there should be compulsory acquisition of land in the slums</li> <li>-Proper planning of the town by the Town planning department</li> </ul>	<ul style="list-style-type: none"> <li>-MCH; Town Engineer, Town planner</li> <li>- Kenya Rural Roads association (KURA )</li> </ul>	-Short-term	1.0	2.0	3.0	4.0	8.0
5. Improve waste disposal	<ul style="list-style-type: none"> <li>-Establishment of a new dumping site/ relocation of the current dumpsite</li> <li>-Compact the existing waste at the dumpsite in the short term</li> <li>-Re-filling of quarries from the current road projects</li> <li>-MCH should start identifying new sites for the dumping site and start negotiations with the contractors and owners of the quarries to reserve the quarries for disposal</li> <li>-Proper disposal of construction waste which at the moment is haphazard</li> </ul>	-MCH;Town Planner	-Mid-term ( 2 years)	1.0	2.0	3.0	5.0	10.0

Objective/ Priority area	Key Actions	Responsibilities	Time Frame	Indicative Budget (Kshs Millions)				
				2010/11	2011/12	2012/13	2013/14	2014/15
	-MCH to establish a commercial incinerator at the dumping site to handle hazardous waste and serve the South Nyanza region.							
6. Proper disposal of special/hazardous waste	-Proper handling and disposal of various categories of hazardous/special waste e.g. Dead animals, e-waste recovery plant in the town, Oil from Jua kali garages, <i>Mgongo wazi</i> (in a more sanitary way), ELVs, Hospital wastes, Unclaimed bodies, Body parts e.t.c	-District Public Health Officer -NEMA -MCH	-Long-term	0.5	1.0	1.5	2.0	2.5
7.Environmental educational awareness	-Through the school system from early childhood -Use all local communication systems / media to sensitize the public on good practices on waste disposal e.g. using even funeral meetings, church sessions, radio stations e.g. Radio Lake Victoria(RLV), <i>Ramogi</i> etc -Chief <i>barazas</i> ; Door to door campaigns to create awareness and education on SWM -Collective responsibility on environmental awareness by all stakeholders -Youth groups to act plays on sensitization on SWM	-Proposed Director of Environment -MSF -Public health department	-Immediate and continuous	0.5	1.0	1.5	2.0	2.5

Objective/ Priority area	Key Actions	Responsibilities	Time Frame	Indicative Budget (Kshs Millions)				
				2010/11	2011/12	2012/13	2013/14	2014/15
	-sensitization of women on the need for proper disposal of sanitary towels; Households and schools to be targeted in sensitization condoms ;parents at the household level need to sensitize							
8. Capacity building of stakeholders	-Conduct Trainings on new SWM technologies -Conduct workshops for stakeholders	-MCH; Director of Social Welfare	-Immediate and continuous	0.5	0.5	0.5	0.75	1.0
9. Strengthen PPP/Privatization	-Motivate CBOs (T-shirts, milk, etc) -Joint meetings with private sector to have presentations on solid wastes -There is need for budgeting to strengthen PPP; identify funding sources -Support for CBOs and private entities in SWM -Good structures in place where all the partners benefit -Develop a PPP policy to define dealings with different stakeholders e.g. youths	- MCH;Town clerk	- Immediate and continuous	0.5	1.0	1.5	1.75	2.0
10.Enforcement of laws and policies	-Enforce SWM by-laws -Enact by-laws to discourage the use of plastic bags -Categorize the waste producers (carpenters, cereal sellers, etc) rather than operating without	- MCH- Enforcement Officer - NEMA District Environment Officer - District Public	- Immediate continuous	0.5	0.5	0.5	0.75	1.0

Objective/ Priority area	Key Actions	Responsibilities	Time Frame	Indicative Budget (Kshs Millions)				
				2010/11	2011/12	2012/13	2013/14	2014/15
	control -Discipline and change of attitude -Look at the current by-laws and fill in the gaps -Various lead agencies and relevant stakeholders to be made aware on SWM regulations -MCH to work together with the PH office in licensing of traders to ensure PH regulations are followed -Harmonization of all activities involving laws on SWM at the local level -Joint monitoring committees drawn from different stakeholders -MCH should have a PH department; Department of environment to monitor on issues of compliance with legislation	Health Officer						
11. Resource mobilization	-Devolved funds from the government e.g. CDF -Networking with international communities (UN HABITAT,SIDA,USAID) -Fundraising through <i>harambees</i> -Local authorities through LAVLARC -Stakeholders to put some of the activities in their budgetary allocations -Environmental funds e.g. GEF and other bi-lateral funding in	- MCH;Mayor ;Town Clerk; Proposed Director of Environment	- Immediate and continuous	0.5	0.5	0.5	0.5	0.5

Objective/ Priority area	Key Actions	Responsibilities	Time Frame	Indicative Budget (Kshs Millions)				
				2010/11	2011/12	2012/13	2013/14	2014/15
	<ul style="list-style-type: none"> <li>programmes in this region e.g. LVEMP</li> <li>-MCH to have a budget line for SWM</li> <li>-MCH to start charging fees for garbage collection</li> <li>-Technical waste committee comprising of financial institutions, investors</li> <li>-Bodies which can give ideas to be incorporated</li> <li>-Local investors with businesses in town to be brought in through corporate social responsibility</li> <li>-MCH to charge the individuals and CBOs dumping at the skips at the transfer stations to cover for transportation costs to the dumping site</li> <li>-MCH to Sell of recyclable materials especially organic wastes</li> </ul>							
12. Change of SWM organizational set-up	-Establish the Department of Environment and recruit the technical staff e.g. the Director of Environment	- MCH; Town Clerk ;Chairman of the finance and general purpose committee	- Mid-term	0.5	1.0	1.5	1.75	2.0

## CHAPTER FIVE: MONITORING AND EVALUATION

Performance monitoring and evaluation shall be the responsibility of those who are most closely involved in the implementation of the annual plans. In this respect, the head of the relevant Municipality Departments will carry out continuous performance self assessment. They will be expected to have the capacity and will be given the responsibility to undertake performance measurement and reporting.

MCH plans to put in place an effectual monitoring and evaluation system through a committee in order to ensure successful implementation of this strategic plan. The monitoring system will provide information on the progress of the implementation of the various activities that will form a basis for future improvements. The monitoring will improve service delivery and provide a basis for timely corrective interventions in case of failure. The objective will be to institutionalise an effective and participatory M&E system for the municipality. This will allow active participation of stakeholders and help build donor confidence.

It is envisioned that the municipality and its partners in the implementation of this ISWM strategic plan activities will agree on the indicators to be used and to provide feedback on progress. Reports will be key benchmarks on the progress on the implementation of ISWM activities in the MCH. The reports will enable the management and key stakeholders to track the implementation. Periodic reviews will be organised to determine status with intervention suggestions.

The selection of indicators will take place at the design stage and will include indicators at all levels – objectives, inputs, activities, outcomes and impact. Outcome or impact indicators will measure the effect of activities in respect to the extent to which they meet the set objectives. On the other hand, process and output indicators at all levels will be important in monitoring and evaluation.

The methodology outlined below shall be used for performance monitoring and evaluation. At the beginning of the year, all sections dealing with SWM will set their performance targets as part of their annual work plans as derived from the strategic plan. In setting these targets, it is proposed that the performance framework shown in table 3 below be used.

**Table 3: Performance framework**

Expected results	Performance indicators	Source of verification	Data collection methods	Data collection frequency	Responsibility	Assumption

Key reasons for monitoring are:

- a) Monitoring will establish if performance targets have been met and the explanations as necessary
- b) Monitoring will act as an early warning system and detect potential difficulties and help to address them during implementation
- c) It will provide feedback to the next phase of implementation, reduce the cost and /or increase the efficiency of post evaluation.

The various management organs will also monitor the progress of the implementation process through quarterly reports from the various sections tabled during their respective meetings. The quarterly reports will then be consolidated at the various levels until there will be a municipality-wide review report.

Any activities that will require re-scheduling or targets that need revision shall be adjusted through a re-negotiation process. A strong Strategic Planning unit (Implementation committee) was created during the Stakeholders Forum held in Homa Bay and charged with the coordination of performance monitoring and evaluation. This unit shall develop tools and procedures for on-going monitoring and evaluation

The evaluation of the annual plans is important to find out if the intended results have been realised. Performance evaluation will be carried out at agreed intervals and will be used as benchmarks for annual evaluation. The outcome of the annual evaluation will form a good basis for the plans for the next year.

### **5.1 Key Assumptions**

The 5 year ISWM strategy was formulated based on the following key assumptions;

- That there will be adequate funding for all the activities to be undertaken in the strategic plan.
- That all the stakeholders responsible for the strategy activities will be cooperative and undertake their responsibilities as laid out.
- The solid waste generation rates within MCH will remain constant within the 5 year implementation period of the ISWM strategy.

### **CONCLUSION**

It is anticipated that following implementation of the above strategies, solid waste management standards will improve and there is likely to be an improvement of current collection rate, increase the amount of waste recycled, improve access to investments and employment opportunities in ISWM, improved access to basic urban services, and well informed personnel/institutions to operate, maintain and manage solid waste sustainably. It will also improve the health and livelihoods of the local community.

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