REPUBLIC OF KENYA

COUNTY GOVERNMENT OF BOMET

DEPARTMENT OF LANDS, HOUSING AND URBAN DEVELOPMENT

DEVELOPMENT CONTROL AND MANAGEMENT POLICY, *2023*

PREPARED BY:

THE COUNTY GOVERNMENT OF BOMET

IN CONSULTATION WITH STAKEHOLDERS

FOREWORD

January, 2023

At the onset, urban growth in Bomet County, though it started to a slow pick-up in the 90s, it has now defied all challenges and has assumed a rapid growth path. This growth is largely unregulated, and has in the past, assumed a natural path, / normally referred to as urban sprawl. This haphazard expansion is not desirable nay sustainable

In view of the above, this policy has been formulated to streamline and guide the sub-sector in attaining desirable result. It will therefore ease pressure on various growth corridors and spur desirable growth in the county. The advantage of having controlled and guided growth in the county towns will act as catalysts of economic growth.

Various utilities will be properly catered for and future growth will promote fast transformation of informal settlements into well planned settlements. With the policy in place, mushrooming of illegal settlements and informal business shanties will be a thing of the past, and hence promote a cleaner and a more accessible town.

I wish to call upon all those involved in management of towns across Bomet County to collaborate and ensure that the implementation of this policy is a success.

Finally, my thanks goes to all those who were involved in the preparation of this policy. Our emphasis should now be focused on the implementation of the policy.

H.E. Hon. Prof. Hillary Barchok
Governor
BOMET COUNTY

PREFACE

Development Control and Management Policy in relation to land use is one of the key policies that the Government has embarked on. It provides an insight of what the Government intends to do in effecting desirable changes in all urban centers in the county.

Implementation of the policy will form the basis of spatial planning. It will therefore forms a framework for Development Control and will ensure proper management of the Urban and Rural areas

Over the last ten years, statistics show that, the town has been expanding tremendously. This has brought about huge pressure on urban utilities. A chance has now been created by this policy to streamline these activities and hence ensure efficiency in terms of accessibility and will promote excellent ambience in urban environment.

Urban developers can now refer to this policy with view to ensuring their activities prove profitable and coherent with other developmental planning activities.

I therefore call upon all those involved in urban planning and management to take up the challenge in implementing fully the programmes and strategies in this policy.

Finally, I thank all those who collaborated with us in preparing this policy.

Hon. Joseph Kirui
County Executive Committee
Lands, Housing and Urban Development
BOMET COUNTY

EXECUTIVE SUMMARY

The County Government through the department of Lands, Housing and Urban Development has direct responsibility over the control of land use development. Development of land in the county has been plagued by a myriad of problems, including; haphazard development and mismatch in all round development. These problems occur largely as a result of lack of an urban development control and management policy and a framework that aims at improving effective management of land use activities in urban centers across the county.

Prior to the enactment of the County Government Act, 2012, the mandate of the land use and land development control was vested on the now defunct Local Authorities only.

Currently, the issues covering land development and subsequent control is now vested on the County Government and public as well as private participation is now critical and determining the land use activities in the county. The guidelines contained in this policy will assist in the implementation of a coherent land development control criteria that will promote sustainable development throughout the Country with matters regarding to land use and land development.

The policy will be a useful tool in decision making and as such land use management has been analyzed in the following areas;

1. Destructing of local land use management committee to suit modern arrangement in the county government;
2. County Government Act, 2012;
3. Development of an Action Plan for implementation of the policy;
4. Reviewing existing legislation and institutional aspects; and
5. The technical aspects, which include urban development control and management framework.

The policy has highlighted public participation and introduction of and urban development control unit, as well as programmes that will improve service delivery to the citizens of Bomet County.

This policy outlines how the processes outlined in the policy would be implemented. By implementing the programmes set out in this policy, the County Government will promote and maintain public confidence in management of the town affairs. This will ensure public cooperation is maintained at all times.

Urban land development control is entirely a Government's affair. The responsibility can be effected within the confines of existing legislation. This will not only strengthen the implementation of the policy, but also inculcate a culture of participation among the relevant stakeholders. The issues discussed in this policy include: principles of urban development control, the need for creation of a unit that is devoted to urban development control, need for devoted urban development control and management programmes.

The crucial part of this policy is the development of an action plan that will enhance execution of the plan. There is need to understand in detail the goings on in urban areas in terms haphazard development and mushrooming of informal settlements to appreciate the magnitude of the problems faced by the county residents.

This policy has defined the objectives and vision as well as the mission that will guide the implementation of the policy. The strategies outlined in the policy will be monitored and evaluated to ensure successful implementation of the policy.

Land development Control policy is an instrument that will be used together with other pieces of legislation in the sector to guide overall development of land use activities in Bomet County. Since independence, the development of towns and cities countrywide has relied on colonial historical bye-laws, which were developed accordingly to the old constitution at Lancaster, prior to independence.

Upon the promulgation of the new constitution in 2010, a lot has taken place in the developments of towns and cities. New bye-laws have been development however, with the coming in the County Governments in the County, tremendous changes have taken place. It is on these premises that Bomet County Land Development control and management policy has been developed. This policy is based on the existing constitution and the County Governments Act, 2012.The Act provides for a planning that is based on the integrated development plan of the County, and other planning tools developed on the basis of the Act in line with the provision therein.

Since the declaration of Bomet town in 1990s into a district headquarters, development in the town has been largely uncontrolled, hence unplanned. This scenario is bound to affect the future growth of the town and hence other towns in the County.

To address this challenge, this policy has been developed to guide overall process of development in the County, pertaining to the following areas:

a) Development of houses and Commercial Units;

b) Development of urban centers infrastructure;

c) Change of user issues; and

d) Overall expansion of the towns in the County.

The policy will guide in the implementation of the programmes and strategies developed in this policy. The policy, once an Act has been developed will be self-executing, as an implementing unit has been in-built in the policy. Once, the policy has been operationalized the in-built monitoring and evaluation will promote seam-less implementation of the policy alongside other programmes in the sector.

This policy will ensure proper and organized urban centers, conducive for investment and habitation. The annexes attached to this policy describe in detail various approaches that will enhance the implementation of this policy.

1. Background

Urbanization is now a worldwide phenomenon. Urban centers are experiencing unprecedented growth, especially in developing countries. Kenya is no exception. Along with urbanization, is unprecedented growth in urban centers countrywide, exerting pressure on the delivery of services in these centers. Historically urban centers and their subsequent growth has been associated with colonization, where people were congregated in controlled centers to serve the needs of colonial masters in the provision of cheap labour. These centers subsequently evolved into what we now call urban areas, and they have been replicated throughout the County, and with a lot of diversity. At present, the urban population is estimated at 21% and the annual natural growth of towns/urban centers, estimated at 3.6%.

The pressure which comes with urbanization are quite evident in almost all sectors of the urban areas. The demand for services to match the increasing needs of the urban dwellers are clearly documented. The pressure on housing is clear in the fast transformation of formal settlement and informal settlement into multi-purpose utilities, while rising demand for accommodation has led to establishment of informal settlements, normally referred to as slums and town succession devoid of any formal planning and requisite services/utilities. In short, this has led to uncontrolled planning, particularly witnessed in the outskirts of the city/urban centers, particularly in the private lands around these centers.

Bomet County, as a whole has experienced an upward increase in its urban centers, as well as urban population, since it was turned into a District Headquarter in the late 90s, and early 2000. Towns and Market centers have mushroomed everywhere, in what were formerly farmlands. The outer parts of towns have equally experienced an upsurge in unplanned development. Pressure on land around County , Sub-counties' headquarters , and environs has brought in a new dimension in the development and growth of urban centers in the County. With the urban population expected to reach 1 million before 2025, uncontrolled devt will get worse in urban centers/towns if nothing is done to guide the process of urbanization and urban development in general.

2. Introduction

This policy sets out the urban and rural development requirements for the development of land in and around urban centers in the County of Bomet. It will largely relate to other existing land use guidelines and standards developed by the National Government under the Physical Planning Act, and other related legislation. It is expected that when this policy will be put together with all other policies in existence, all of them will create a flexible framework for the use of satisfactory planning powers, within which the creation of a wide range of land use types and habitable environment is possible throughout the County.

3. Rationale

The County at the moment does not have an urban development control and management policy, and therefore urban expansion and development is proving to be a big challenge. The County Government is finding it increasingly difficult to control and manage the process of urban development and expansion, let alone the provision of basic utility services. The lands surrounding the towns/urban centers in the County are largely free hold or privately owned by individuals. Public lands is quite limited and it is proving to be quite costly to expand the town as desired since the land is not available for the public use, hence much be acquired when such need arises from time to time. Although the department of Lands, Housing and Urban Development play a leading role in implementing reforms in the urban setting, lack of policies relevant in the sector is hampering these efforts, in guiding the provision of services controlling development, and safeguarding of urban centers.

The presence of this policy will therefore guide in decision making process as relate to urban development and management. Furthermore, population increase has had significant impact on the expansion of urban centers in the County, which has in turn affected free mobility and demand for land

to accommodate the ever increasing needs of urban residents as well as visitors, particularly in the County Headquarters. The consequences of increased population and expansion of structures are far reaching, particularly in the unplanned parts of the towns/urban centers, due to emergences of slums and urban conflicts. This may lead to increasing frequency of disasters and deteriorating quality of life, as well as environmental degradation. The emergence of unplanned urban structures may lead to difficulties in future planning, thereby compromising the safety and ambience of the urban areas.

The County Government has endorsed the County integrated development plan, 2013-2017, as its planning basis. One of the aims of CIDP is to ensure all urban centers in the County are well planned to drive the growth and prosperity in the County. It requires as an obligation of the County Government that all stakeholders are consulted to ease decision making process. In the absence of development control and management policy, this has proved to be a challenge and therefore structured engagement of the stakeholders has not been possible. The presence of this policy will be a key determining factor for decision making over land as a catalyst to urban development.

At the moment, control over the development on land is limited in terms of the existing legislative framework in the new dispensation. As a result of this limited control on land use activities, a loss of scarce resource is rampant in the process of leasing, surveying and adjudication of land. This has resulted in limited opportunities on the side of the County Government in exercising full control over this resource and resultant benefits. In order to have an overall increase in efficiency, impact and its utilization, urban development control and management policy is imperative.

Another aspect is the lack of mechanisms/tools to enable the Government to monitor development activities in urban areas. This has been exerciser bated by disparate information, which is also compounded by insufficient sharing amongst the stakeholders. In the contest of diminishing space, rising demand, competing uses and the resultant impacts, the urban development control and management policy will address issues of land allocation, succession, zoning, uses, change of user, demarcation, public utilities, while ensuring equity and good governance. It will further address all obstacles relating to access and inequalities, including pricing to ensure safety nets for the urban poor. This policy will endeavor to address urban development concerns in urban areas, with the aim of achieving equitable access and management of land to enhance sustainability in these areas.

This policy will facilitate a process where residents and the management interact to determine the viability of options available in planning and development of urban centers in the County with a view to:

a. Addressing specific issues in urban development control and management;
b. Determining user differentiation in access use and control over land as manifested in little or no guidelines to determine the provision, management and safeguarding of land in urban areas; and
c. Address perceptions on the effectiveness of existing institutional arrangements to enhance equitable access, use and management of land in and around urban areas.

In addressing these issues, this policy will assist in integrating public /stakeholders perspectives in the operationalization of the County strategies and programmes that are aimed at sustainable management of urban and peri-urban land.

4. Purpose of the Urban Development Control and Management Policy (UDCMP)

The UDCM policy is developed in the Context of the County Government reforms efforts on urban land use to support streamlining of these activities within its operating organs and in line with the National Development agenda in urban areas. The policy serves as a framework for the County Government, relevant department and other stakeholders on streamlining land use perspectives in related policies, programmes action and investments. It provides stakeholders with guidance on how to incorporate different needs and concerns of urban residents and thereby lead to equitable access, use

and management of land in the County. The policy is based on County and National commitments to achieve sustainability in urban land use and assist stakeholders to meet these commitment.

The policy will address the following aspects:

- ✓ Institutional strengthening for land use mainstreaming in the County development aspiration at all levels; County, Sub-county and Wards;
- ✓ Equitable land use access and management;
- ✓ Data generation and information access;
- ✓ Participatory approach in urban policy and programmes; and
- ✓ Promote and enhance effectiveness and efficiency in the decision making processes.

5. Policy Vision

A County where there is equitable access and sustainable use and management of land for urban needs, socio-economic development, integration and environmental safety.

6. Policy Goal

i. Enhance efficiency, effectiveness and sustainability in land use and urban management in the County.

7. Objectives of the policy

a) To ensure orderly development, and optimal use of land.

b) to ensure the proper execution and implementation of approved physical development plans;

c) To enforce actions in case of contraventions of plan proposals, policies statutes and development standards

d) To ensure development does not cause negative impacts to the environment

e) To continuously monitor, evaluate and review planning regulations, standards, and procedures to ensure their relevance to changing societal values, norms and practices.

f) To provide rationale for development decisions.

g) To ensure democratic public participation development decision making

8. Policy Guiding Principles

- ✓ Land is a finite and fragile resource, essential to sustain life, development and habitable environment;
- ✓ Land development and management should be based on participatory approach, involving users, planners and policy makers and all levels;
- ✓ County Government play a central role in the provision, management governance and safeguarding of land use and utilities; and
- ✓ Land has an economic value in all its competing uses and should therefore be recognized as an economic good.
- ✓ Participatory decision making in Urban land use & Development
- ✓ Equitable access to Urban land for economic prosperity
- ✓ Continued Evaluation & Monitory of the standard & procedures

9. Scope

This policy sets standards for managing urban areas/towns for town/urban planning and development. It applies to all urban centers/towns in the County, including peri-urban centers and markets, and urban development activities, even in the free hold areas adjacent to the urban centers in order to standardize the land use of these areas.

10. Legal and Regulatory Framework

The County has a number of statutes to respond to urban development control and management. Though these statutes do not apply directly to urban areas in the County, it is however, recognized that an enabling legal and regulatory framework/environment is imperative to create the desired impact in the urban development control and management and the fight against haphazard and inefficient development in urban areas/towns across the County. These policy shall be implemented within the framework of the Kenyans Constitution other relevant pieces of legislation, regulations, guidelines and sectorial policies.

11. Control and Management of Urban Areas/Towns

Control and management of urban development is crucial in maintaining progressive and sustainable urban growth .Success or failure of an organization depends largely on the policies and management instruments in place or lack of them. It is therefore imperative to examine the issues that affect them. Lack of comprehensive policies to guide urban development affect the productivity and efficiency of service delivery in urban areas. It imposes huge costs on enterprises, industrial productivity, low investment and poor quality of life and environmental degradation, and even loss of business.

In light of this, managers in the urban sectors have an important role to play in the Government's response to urban areas/towns development and subsequent control and management. It is their responsibility to address the problems/challenges caused by unplanned growth in urban areas/towns in the County.

This policy is the entry point for urban control and management in the County as it establishes a coherent approach in addressing the issues associated with urban growth /sprawl.

It shall also provide consistency in the Government's dealings with urban areas/towns through programmes, procedures and the regulations regarding the flow of the policy.

The policy will therefore address the following land / urban control and management issues:

a. Land and land use planning;
b. Land adjudication/subdivision and change of user;
c. Boundary identification, surveying and demarcation;
d. Land use mapping;
e. Zoning;
f. Planning standards and codes;
g. Bye-laws e.t.c.
h. Nature of development;
i. Utility distribution, and
j. Service delivery;
k. Uncontrolled urban sprawl and migration;
l. Environmental deterioration;
m. Poor urban infrastructure ;
n. Crimes and insecurity;
o. Poverty, slums and squatter settlement;
p. Poor governance and weak coordination;
q. Lack of adequate resources and skills;
r. Lack integrated planning and management; and
s. Weak rural-urban nexus or interface; and
t. Lack of data and research and development.
u. Poor data management

12. Urban Development Programmes /Initiatives

The center pieces of this policy revolve around initiating and implementing relevant programmes and initiative in urban areas.

The Programme will include, but not limited to the following:

12.1. Urban Population Control

Critical to the success of urban development control and management is the control of urban population through integrated approaches. This can be done through guided development in peri-urban areas and free hold lands around or adjacent to urban centers through making them attractive and suitable for population. Rural-urban migration can also be minimized through this effort and a number of initiatives through creation of incentives and opportunities available to rural population. The other, measures, is also through land use classification which limits densification of specific areas.

12.2. Urban Spatial Integrated Development

Space in urban areas matters significantly. Integration of spatial development with socio-economic development in urban areas is bound to increase productivity in these rea through proper classification of users and their contributions. This will impact positively on urban growth and development. There is therefore need to integrate spatial activities in urban areas to improve efficiency.

13. Implementation Framework

The end result of this policy is to ensure that County Government is able to sustain the provision of services in a more secure and efficient environment in urban areas. The success of this policy will therefore depend on its effective implementation and achieve a coordinated and collaborative approach of all the stakeholders and relevant departments.

The following components will form the basis of implementation:

13.1 Institutional Framework (See Annex 1)

An institutional framework is necessary for the implementation of the urban development control and management policy with respect to human and financial resource management. This needs a high level commitment and good will by the Chief Executive county government and the relevant department. This involves allocation of adequate resources for urban development under the expenditure framework of the County to facilitate effective implementation of this policy. A unit charged with urban affairs may be established under the department of Lands, Housing and Urban Development to facilitate implementation and coordination of this policy. Other departments working in the County will have this policy mainstreamed to ensure maximum impacts in ensuring the activities under this policy are implemented in consonance with those of other departments, particularly concerning urban development. The urban planning unit to be established will be headed by two mid-level cadre officers and they will be responsible to the Chief Executive and County Director, Lands, Housing and Urban Development for formulation and review of other relevant policies as well as coordination of implementation of the policy and activities. The unit will be responsible for coordination of mainstreamed activities in other department with regard to implementation of urban development control and management policy activities in the entire County.

All County Executives Committee Members/Authorized officers are responsible and accountable for implementing this policy and development of programmes and initiatives in their departments. They

are incumbent upon them to take immediate and appropriate corrective action(s) when the provisions of this policy are violated.

13.2 Responsibility and Accountability

The institutions responsible for implementing this policy are:

13.2.1 Role of the County Government

The County Government was established and enshrined in the Constitution of Kenya 2010, Chapter Eleven on the devolved Government. The County Government Act, 2012, further enforced the idea of existence of the County Government in Kenya. The roles of the County Government are clearly stipulated in the Act. One of the roles pertaining to this policy is the mobilization of resources and co-ordination of multi-sectorial response to the development aspects of the Counties:

The main activities include:

- ✓ Mobilization of resources;
- ✓ Mobilize and coordinate various Government interventions in all sectors;
- ✓ Develop Policy, strategy and guidelines;
- ✓ Support the development of sector specific programmes;
- ✓ Develop policy, strategy and guidelines;
- ✓ Support the development of sector specific prgrammes;
- ✓ Develop County Information Management Systems (CIMS);
- ✓ Collaborate with regional and international agencies; and
- ✓ Play a leadership role in advocacy for the control of urban growth and development and provision of quality and prompt services to the County residents.

13.2.2 Role *of County Executive Committee Members in the implementation of this Policy*

The County Executive Committee members will:

- ✓ Develop, implement and review sector specific policies;
- ✓ Advocate for urban development issues in decision making at all levels of socio-economic development;
- ✓ Ensure allocation of resources and evidence/programme based budgeting;
- ✓ Monitor and evaluate policies;
- ✓ Strengthen commitment at all levels of the management in the County Governments and private as well as development partners, and other stakeholders ;
- ✓ Provide support to urban planning and coordination unit (UPCU);
- ✓ Link urban development control and management to expenditure framework budgeting process of the County;

- ✓ Chair inter-departmental committee meetings; and
- ✓ Assist in mobilizing resources towards implementation of the policy.

13.2.3 Role of the County Director

The responsibilities of the County Director will be to:

- ✓ Ensure urban development control and management policy is implemented in the County
- ✓ Formulate and review urban development related policies in the County;
- ✓ Build capacity in UPCUs to implement the policy(ies); and
- ✓ Monitor and evaluate implementation of the urban development related policies.

13.2.4 Role of Urban Planning Secretariat under UPCU

The functions of the urban planning secretariat will be to:

- ✓ Co-ordinate implementation of the urban development control and management policy in the County;
- ✓ Identify training needs and build capacity in the UPCUs;
- ✓ Advice UPCUs branches in the Sub-counties on urban development control and management issues as relates to urban growth and development;
- ✓ Develop and review urban development related policies in the County;
- ✓ Maintain linkage in the UPCUs;
- ✓ Organize tri-annual consultative meeting for public sectors, organizations and other stakeholders to review progress in the implementation of the policy ; and
- ✓ Establish and maintain urban development GIS data base for the County.

13.2.5 Role of Urban Planning Coordination Unit

UPCUs will be responsible for their respective Chief Executives County Directors and Head of divisions for the implementation of this policy.

The function of the UPCUs will be to:

- ❖ Ensure the urban development issues are mainstreamed into the core functions of the departments and organizations/agencies operating in the County;
- ❖ Provide information necessary for planning and management, as well as budgeting for urban development programmes;
- ❖ Ensure that urban development control and management policies are implemented within the departments of the County;
- ❖ Develop and adopt guidelines for the use of allocated resources for the urban development activities;
- ❖ Make proposals for enhancing the policies in the urban sector;

- ❖ Develop operational objectives and prepare Action Plan to implement the policy against haphazard expansion of urban areas in the County;
- ❖ Constitute secretariat for the departmental and organizational and committee to coordinate the activities for the UPCUs;
- ❖ Conduct statistical analysis and compile data for use by the urban sector;
- ❖ Liaise with the County Government departments and UPCU secretariat and other sub-counties' units for best practices sharing and implementation;
- ❖ Introduce new services or models of services delivery to deal with urban development;
- ❖ Advocate for legislation to project the urban land use from abuse and encroachment and to encourage effective roles in the control and management by all relevant stakeholders; and
- ❖ Develop Sectors Specific Information, Management, Communication materials for awareness creation and information dissemination.

14. Monitoring, Evaluation and Research and Development

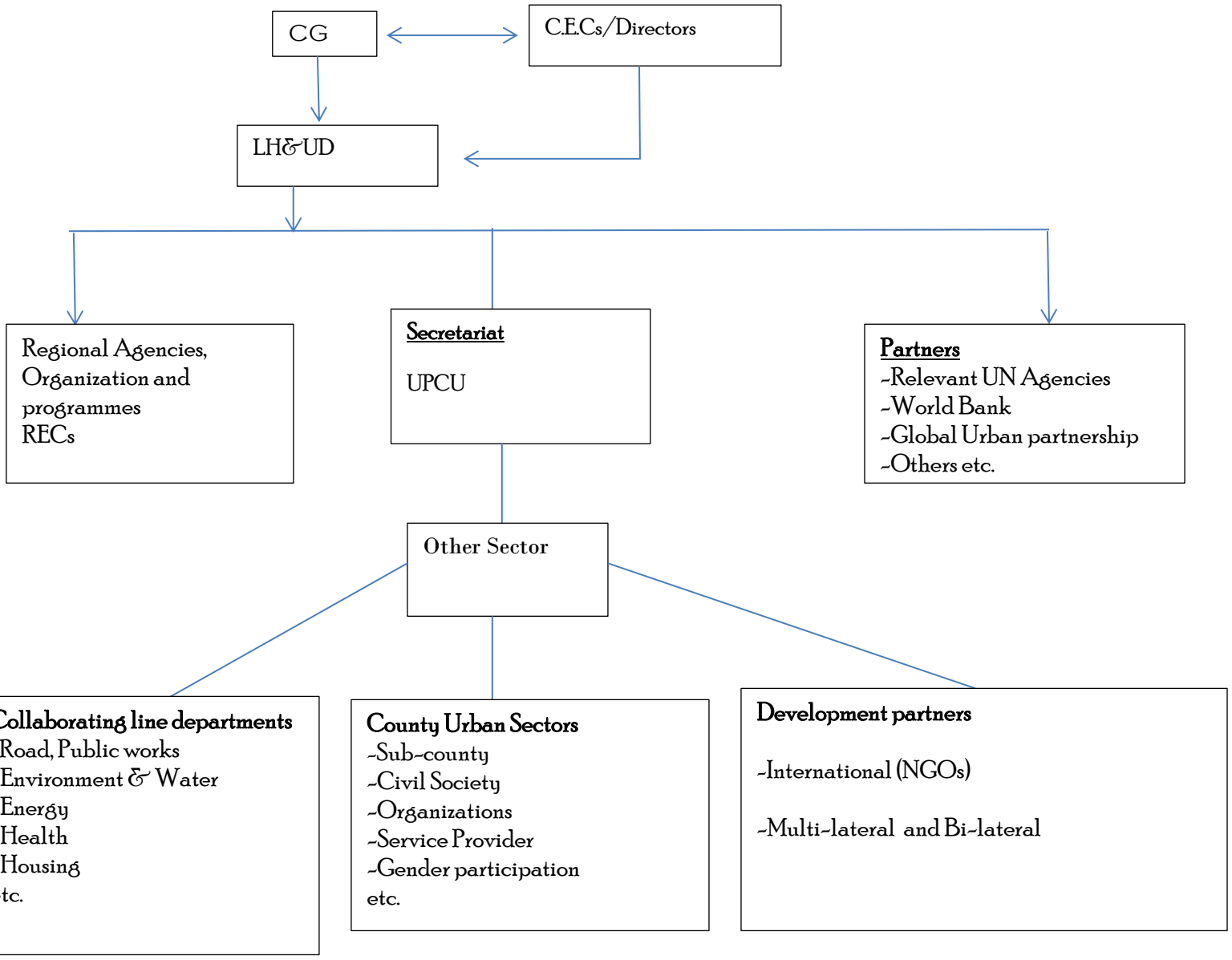
The urban sector shall generate information on urban areas status and service delivery through monitoring, evaluation and research and development for urban planning, decision-making, resource allocation and managing the urban sectors response to challenges and practices. Research and development is also expected to add impetus to implementation of emerging urban dynamics.

15. Policy Review and Implementation

This policy will be reviewed from time to time to ensure it remains relevant and alive to the ever changing needs of the urban resident and towns' dynamics. Individual sectors will develop policies in line with this policy to reflect sector specific mandates and needs of urban areas in the County.

ANNEX I: INSTITUTIONAL ORGANISATION

Proposed institutional framework for urban development control and management policy:



ANNEX II: PLANNING IN THE COUNTY

General Guidelines:

Preparation of County Spatial Plan

Physical/Spatial Planning in the County will be guided by the County Spatial Plan. The plan defines strategic policies for the purpose of determining general direction and trends of the physical development of the County.

The policy will refer to the County Government Act of 2012, Part XI on County Planning in relation to the contents of the plan and procedures outlined in the preparation of the county spatial plan.

Preparation of the plan will be initiated by the County Executive Committee for Lands, Housing and Urban Development.

Preparation of Integrated Urban Areas Spatial Plans

Plans shall be prepared for existing and proposed urban centres in the County and will form the basis for the spatial structure that guides and control development of services and infrastructure.

The policy will refer to the Urban Areas and Cities Act of 2011 in relation to the Contents of the plan and procedures outlined in the preparation of the integrated urban areas spatial plans.

The plan may be initiated by the:

Planning Authority; County Executive Committee Member in charge of Lands, Housing and Urban Development; and the Town Planning Committee coordinated by the Urban Planning Coordination Unit (UPCU).

Preparation of Urban Areas Building Regulations.

Former Local Authorities by-laws and Building Codes will be reviewed to conform to the County Government requirements. The policy will further be guided by the Planning Standards Handbook in relation to type of development, plot coverage, Plot ratios, plot frontages and setbacks in determining approval or deferment of development applications.

Preparation of Zoning Plans

Urban areas in the County will be zoned according to the following land uses:

- Residential
- Industrial
- Educational
- Commercial
- Public Purpose
- Public Utilities
- Transportation use.

Residential Zones

The residential areas will be grouped into High density residential areas, Medium density residential areas and Low density residential areas. The policy shall refer to the building codes, Planning Standards Handbook and By Laws to determine development applications for approval.

Industrial Zones

Industrial zones will be designated according to Light Industrial Zones, Medium and Heavy Industrial Zones. In establishing plot requirement for development, location and sitting industrial activities the policy will refer to Planning Standards Handbook and National Environmental Management Authority (NEMA) requirements and other stipulated County Regulations.

Educational Zones

In determining development application for school institutions the policy shall be guided by stipulated Laws and Regulation in the Educational sector. This will ensure spatial distribution and accessibility of schools and learning institutions.

Recreational and Special Planning Areas Zones:

All riparian reserves, wetlands, open spaces, stadia, environmental fragile areas, planted strip will be planned and zoned as Special Planning Areas. The policy shall be guided by Physical Planning Act, NEMA regulations and other County regulations in the planning procedures and contents of the plans.

Landscaping

All existing trees and shrubs in good condition should be maintained and any additional landscaping to be carried with approval by the relevant technical unit.

Public Purpose Zones:

Zoning of land for public offices, stadium, religious institutions will be done in refference to the National Land Commission on Public Land Administration and other Government Institutions.

Commercial Zones:

Commercial land uses such as Hotels, Restaurant, shops, Private offices fall in this zone. The policy will be guided by Physical Planning Standards, Building Codes and By Laws to determine development applications and citing.

Public Utilities Zones:

The zone consists of sewerage sites, waste disposal sites, sites for commentary in the County. The policy will refer to NEMA regulation and other stipulated laws in controlling injurious development in the County.

Transportation Zones:

Roads in the County are categorized as both classified and unclassified roads. Development will be guided to control encroachment of road reserves and not to access directly major roads. The policy will be guided by master plan on roads and other County Legislation.

The policy will also designate parking areas for motor and non- motorized traffic in the County. The parking areas should be strategic to ensure free flow of traffic.

***Water supply*:** Water reticulation networks will be provided for by the Water Master Plan. The policy will be operational in relation to other legislations in the County.

***Power supply*:** Power supply and way leaves will be provided for by the Service Provider. The policy will to it refer in relation also to other legislations in the County.

Enforcement and Penalties

Development applications shall strictly adhere to above mentioned regulations and Laws and must be subject to approved development plans to conform for any approval to be made in the County. Any development in the contrary will be subjected to penalties and fees established by the County Government.

Rural Development

Rural development in Bomet County is prioritized for Agricultural development. Farm houses and promotion of industrial areas that are compatible with agricultural development will be zoned.

The policy will provide guidelines on Change of User for any development not for Agricultural purpose.

Preparation of Change of User

The Change of user will prepared by the Registered Private Planner or any other Officer designated by the County Government. The policy shall refer to procedures and guidelines as per the Physical Planning Act and other County Governments Stipulations.

Expansion and Land Acquisition:

Expansions in towns will be guided by spatial development master plans and relevant pieces of legislation.

Urban areas gazette boundary will therefore be adjusted from time to time to conform to the spatial plan requirements and development trends of the area.

***Land acquisition*:** Based on the County Government needs land will be acquired for development purpose. The policy will be guided by Legislation on the Lands Acquisition.

Land Surveying and Demarcations

All existing and acquired public land will be expressly surveyed and acquired.

ANNEX III:URBAN DEVELOPMENT CONTROL

General Guidelines:

There is an obligation on the towns to ensure that permissions granted under planning Acts are consistent with the policies and objectives set out in the Development Plan, and the proper planning and sustainable development of the town/urban areas.

Standard are set out in this section which new development will generally be required to meet. The standards are intended to give an indication of the criteria that the town will take into account in considering applications for planning permission for new developments. Guidelines as to the towns' requirement regarding particular aspects of the design of development are also given.

The granting of planning permission does not in itself enable development to commence. There are other legal procedural requirements to be considered. In this context, attention is drawn in particular to the need to comply with relevant statutory provisions such as those contained in the Building Regulations, Public Health Acts, Fire Regulations, Environmental Impact Assessment Regulations, etc. and legislation dealing with environmental conservation, heritage and other related issues.

An applicant for permission must have sufficient estate or interest in the relevant land enable him/her to carry out the proposed development.

Conditional to the granting of planning permission, development work shall not be commenced on the site until security has been given for the satisfactory completion and maintenance of the following services: roads, paths, verges, open spaces, car parks, sewers, drains and water mains, and public lighting. Security shall be given by way of cash deposit only and shall not be refunded in full until such time as the Planning Authority is satisfied of completion of the services to be provided. The amount of the security bond will be released to the estimated cost of the development works and services.

New Resident Development

All new residential development will be assessed against the qualitative and quantitative criteria set out below.

Design Guidance

There is need to improve the quality of residential development both in terms of the layout and the architectural design, if sustainability is to be achieved. All new residential developments should be informed by the following principles:

Contribute to the character of the County Governments and Environs

The creation of new residential communities with a distinctive sense of place, and a legible spatial hierarchy.
The creation of sustainable residential communities that allow ease of access to local facilities and services by working and cycling, and public transport where appropriate.

The incorporation of the concept of conservation including energy efficiency and the re-use of non-site materials and features.

The incorporation of a hierarchy of open spaces that are accessible and secure.

The following features should be taken into account by the planning Authority in assessing residential proposals:

Proximity to Town Centre Facilities and to Public Transport Nodes
Such locations should be appropriate for the provision of higher densities.

Quality of Proposed Layout and Elevation Design.
The quality of the residential environment will be paramount in proposed residential schemes. As many dwellings as possible should have access to natural light.

Mix of Dwelling Types
All schemes on sites in excess of 1.0 hectare (approximately 2.47 acres) should have a variety of dwelling types.

Ancillary Facilities
All schemes should include provision of, or ready access to, an appropriate scaled range of social and community facilities, including shopping, education, health and childcare.

Quality of Proposed Open Space and generalLandscaping
Detailed landscape proposals, including specifications, should be submitted with all planning applications. The detail of these proposals should form an integral part of the assessment of the quality of the proposed layout.

Quality of Pedestrian and Cycling Linkages between Open Spaces and to and from Local Facilities
The provision of safe pedestrian and cycle links to enable safe access as far as possible to open spaces and local facilities should be required. Narrow, potentially unfrequented or unsupervised routes should not be permitted.

Levels of Privacy and Amenity
Privacy is an essential part of the quality of the residential environment. The relationship of buildings to one another, potential overlooking, sunlight/daylight standards and the use of screening devices and landscape elements should form the basis of assessment.

Traffic Safety
The quality of the layout and the manner in which it addresses traffic safety is vital. Long straight roads will be discouraged and a layout with good provision for pedestrian safety will be sought. Cross-road should be discouraged. Proposals for traffic calming should form part of the layout proposals at planning application stage.

Children and the Elderly
The needs of children, the elderly and the disabled, especially their safety, will also be taken into account. For example open spaces should be accessible to families and should be overlooked by dwelling in order to allow for passive surveillance.

Residential Layouts
A high quality layout is essential in all residents (housing and apartments) schemes in order to protect and enhance the existing character of the town. In this regard the following requirements must be adhered to in future planning applications:

Layouts should subdivide residential schemes into groups of dwelling, each with their town sense of spatial enclosure.

Avoid unnecessary proliferation of cul-de-sacs, so as to increase inter-linkage.

Safe pedestrian and cycle movement and linkage should be incorporated into layouts. Safe, dedicated, non-vehicular access to open spaces and local facilities must be provided.
The orientation of dwelling should be a key element in the design of the layout. Dwellings should be oriented to maximize access to natural light existing views. It should also minimize

Overlooking and Overshadowing, thereby Protecting Privacy
Each individual house should be set out to achieve a minimum distance of 2.4 meters between the buildings and its boundary on either side.

Through traffic should be separated from local traffic .Road widths should reflect the number of dwelling being served.

Each layout should incorporate acceptable traffic calming measures. Shorter streets and T-junctions as opposed to ramps and special bumps should be encouraged to discouraged speeding and promote pedestrian priority.

The scale and character of development shall respect the character of local architecture, in terms in windows and doors opening, roof design and external materials and finishes.

Public open space should be usable and integral part of the layout. Open space that is the focus or centerpiece, of proposed residential development will generally be encouraged. Such a design will also have advantages of increasing passive surveillance, and thus, reducing the potential for anti-social behavior.

All development should maximize the advantages of the sites' characteristics, including for example the natural topography, existing hedgerows, significant tree groups, streams, archaeological features and existing views to and from the site. Then topography of the site will need to be carefully incorporated in the design in order to avoid the potential of visual intrusion into the surrounding areas.

On- street car parking should allowed only where the road reserve is 12m and above. Otherwise grouped visitors car parking should be provided.

In apartment schemes, concealed refuse storage and bicycle parking facilities should be provided that are accessible to all units.

The layout and each building should provide for access to the disabled.

The minimum road widths required for residential areas shall be in accordance with the physical Planning handbook.

A road width of 5.5 metres and 7.3metres will normally be required for all local access roads in housing developments. Two meters wide footpaths must be provided on each side of the road.

Density of Development
The County Governments should encourage good quality housing densities capable of maximizing the use of scarce land resources while at the same time providing sufficient open space and amenities to support such development. The Planning Authority may refuse applications where it is believed that the density is too low or too high for a particular location**.**

Public Open Space
The town/Council will have regard to both qualitative and quantitative standards in assessing public open space in residential developments.

Qualitative Standards
Open space should be visually as well as functionally accessible to the maximum number of dwelling within the residential scheme. It should be overlooked and accessible.

Existing natural features should be retained within open spaces.

Open spaces should be suitable proportioned and narrow tracts, that are difficult to manage, will not be acceptable.

Suitable and safe pedestrian and cycling linkages to and between open spaces should be provided.

Public open spaces should be equitably landscaped. Both soft (Trees, shrubs etc.) and hard (Paving, seating etc.)Landscaping should be incorporated.

Quantitative Standards
Generally in all residential development public open space should be provided at a minimum rate of 10 percent of the total site area. This rule should apply to parcels of land that are 10 acres and above in size. A relaxation of this requirement should be considered where residential developments are close to the town centres or in proximity to the coast. Where this is relaxed the Council/towns should seek a financial contribution towards the provision of public open space or recreation facilities in the town. This should also apply to plots below 10 acres in size. In calculating the area of open space, roundabouts, footpath, grass margins and other area of incidental open space shall not qualify for open space assessment.

Private Open Space
Privacy is seen as the critical element in the provision of private open space. It should not be overlooked by other buildings or by public areas, such as roads. The provision of screening devices and landscaped features will be key in creating and maintaining privacy.

The County Governments will seek the following minimum requirements for private open space:

Apartments:
1 bedroom: 10m^2
2-3 bedrooms: 15-20m^2

Houses:

3-2 bedrooms: 60-75m^2

The requirements for houses located in or near the town centre may be relaxed, particularly in innovative housing layouts where private open space may occur, for example, as a combination of private and semi-private spaces such as in courtyard layouts etc.

In apartments, private open space can be provided in the form of balconies, terraces, indoor amenity spaces, shared internal county yards and roof gardens.

Building Line.
In general, a minimum setback from the road reserves measuring 9 to 15m is 6m and 18m and above the building line is 9m. In high density areas 4.5m setback could be allowed.

In the context of more innovative layouts, incorporating grouped car parking or parking courts etc. a more flexible attitude to this standard will be adopted. Variations in building lines will be permitted, provided that there is an overall coherence to the design and some provision, where appropriate, for privacy zone to the front of each dwelling.

Existing Residential Development, Extensions & Alterations to dwelling
The following criteria will apply when considering extensions or alterations to existing dwellings. The pattern of the existing building should be respected as much as possible.

Similar finishes, materials and window arrangements, as the existing building should incorporated.

Evaluation detailing should match that of the host structure.A minimum gap of 2.4 meters should be retained between a side-extension and the property boundary so as to prevent dwellings that were intended to be detached from becoming terraces.

Proposed side extension must retain side access to the rear of the property where possible.

Extension must not overshadow windows, yards or gardens, or have windows in flank walls that would reduce a neighbour's privacy.

Home Based Economic Activity
The LAs should take the following considerations into account when assessing applications for home based economic activities:

The nature and extent of the work.

The impact on adjoining properties, particularly in terms of hours of operation, noise parking and general disturbance.

Traffic generated by employees, visitors and deliveries.

The generation, storage and collection of waste.

Permission should be restricted to the applicant only and may be for a Temporary period to allow the County Government to monitor potential impacts.

Retail Development
In Considering applications for retail developments not located in the town centre, and consisting of more than one retail unit, the Urban Centre should have regard to the County Governments' retail strategy and to the following.

High design standard
Adequate off-street parking and loading space**.**

- Prosper provision for pedestrian access to the development and circulation within the development site.
- Provision for street furniture (phones, litter boxes, seats etc.)
- Provision of public facilities (toilet, crèche, clinic, etc)
- Some residential and residential services trades(Doctor, Dentist, Shoemaker)
- Properly sited services area(e.g. refuse collection)
- Properly sited utilities areas.
- Hard and soft landscaping including the retention of existing trees.

- Provision for bicycle parking.
- Provision for taxi drop off points and if relevant for bus set down facilities.

Shop Facade
The planning Authority should encourage good shop front design in new shop facade and should actively pursue the replacement of existing poor quality shop fronts. Good modern design shop fronts should also be encouraged where appropriate. The following criteria must be taken into account by the Planning Authority when assessing planning applications for retail Unit and/ or shop fronts.

The design of a new shop front should relate to the Architectural characteristics of the building of which in forms part. Such features as existing arches, plaster detailing or existing fascias and brackets should be considered in the new design and new internal alterations or proposed Advertising must not interfere with such details.

New shop front design must respect the scale and proportioning of the streetscape by maintaining existing scale of development along street and respecting the appropriate plot width. Large expanses of undivided glass must generally not be permitted. Elevation modeling and vertical proportioning should break up long runs of horizontal facades. The use of fascias, pilasters and stall risers could achieve this.

Fascia panels should be provided as an integral part of the shop front and should be of a depth appropriate to the size of the building and the proportion and the length of the shop front. The construction of fascias linking two or more building, which have different architectural identities, is generally, unacceptably. The construction of fascia's extending above the level of first floor windowsills and the obscuring anddefacing of windows or other architectural details such as cornices shall not be permitted. Corporate image shop fronts will not necessarily, be acceptable as compatibility, with individual building and streetscapes considered more important than company, demands for uniformity. The use of plastic canopies over windows shall be discouraged.
Painting over natural stone or brick finishes isnot permitted.

Town Centre and Commercial Development
In assessing planning application for this type of development. The following consideration, should be taken into account by the County Government, the mix of uses proposed together with surrounding existing uses is a major consideration, particularly in the town centre. Where development proposals should be attempting to create a vibrant urban environment.

A high quality design will be required that protects and enhances the architectural character of the town. Building height, scale and density of development, elevation treatment, materials and visual compatibility with surrounding uses are key considerations.

- The impact of traffic [visitor, employee and delivery traffic]
- The provision for pedestrian and cycle access.
- The amount of parking provided and the desirability thereof. Large-scale developments should be accompanied by a mobility management plan.
- The impact of the proposal on the amenities of surrounding properties and uses.
- The availability of services (potable water, surface water and drainage) and utilities.
- The energy efficiency and overall sustainability of the development including servicing, deliveries, and waste management.

The County Governments should encourage the option of living over commercial or retail developments. Particularly in central business centres.

Industrial /Warehousing Development
The criteria for assessing planning applications for this type of development is as follows:

The design of structures shall be of a high standard and compatible with the design of adjacent structures in terms of building line, heights roof design, proportion, window design, materials etc.

Planning applications should include full details of the nature of and processes involved in industrial activities s together with the means of dealing effectively with effluents, noise, solid waste and gas emissions if relevant.

The site layout is a key consideration; sufficient space shall be reserved within the cartilage of the site for parking of all employees, visitor cars and for the loading and unloading of vehicles. It is intended that such developments should leave one-third of the site free from buildings and that adequate rear access to business premises be made.

A detailed landscaping plan shall accompany all planning applications that should include provision for adequately screening the site and all on –site storage.
All uses should be compatible with existing adjoining uses.

The trafficimplications and access arrangements for all vehicles should be detailed. Large scale development should be accompanied by accompanied by mobility management plan.

The energy efficiency and overall sustainability of the development should be an important consideration.

Development in the Waterfront Development Zone (at the coast, lakeshores and big river banks)
It is intended that the development control standards also encourage a wide range of uses in these areas.in considering redevelopment proposals, building solutions should be sought that will enhance the physical quality of the area. In this regard, all development proposals should be assessed againstarrange of criteria that have been development to ensure high quality of design and the provision of a high quality environment. These criteria should be applied in addition to the normal development control standards.

New building and extensions should be designed to the highest architectural quality. All development proposals will be evaluated against their streetscape potential and overall environmental impact.

The bulk, scale and massing of buildings should be sufficient to accommodate a rich mix of uses and restaurants where necessary.

All residential units should be carefully designed so that they receive adequate daylight in particular into their main rooms.

Consideration should be given at the design and construction stage to the incorporation of community facilities including laundries, communal meeting room and gym facilities into all new departments to meet the needs of both the residents of the proposed development and the wider community.

Provision of access for and safe passage of pedestrians and cyclists.

Development should allow for vehicular and delivery access with adequate car park provision.

Plot Ratio and Site Coverage Standards

Plot ratio

Plot ratio expresses the total amount of floor space in relation proportionally] to the area and is obtained by dividing the gross floor area of the building by the gross site area.

Residential Development

The urban centers will develop their own policy guidelines in terms of plot ratios and densities to guide development in their areas of jurisdiction.

These indicative plot ratios should provide a mix of dwelling size in each case and the number of dwellings per hectare may vary significantly depending on the mix.

Apart from plot ratio other factors to be applied when assessing residential developments will include;

- Height;
- Public open space provision;
- Private open space provision;
- The standards applied to estate, and
- Off-street car parking provisions.

Non-residential Development
All non-residential development will be governed by the plot ratio standards formulated by eachurban centre.

Site Coverage
Site coverage is measure to overdevelopment, thereby safeguarding natural lighting within or adjoining proposed layouts or buildings.

The site coverage is determined by dividing the total area of ground covered by buildings by the total ground area within the curtilage of the site.

All development will be governed by the site coverage standards by each Urban Centres.

Conservation and Archaeology
The urban centres should develop policies in relation to their build heritage that should be protected. In assessing planning application s for proposed developments that may have an impact on protected structures or, the Urban Centers will have regard to:

The Antiquities and Monuments Act (Cap 215) of the Laws of Kenya.

Urban Centers Policies
The following information should be submitted with and planning application in relation to a protected structure or other building of significant heritage;

An Architectural Assessment Report as per the act and planning policies. For the Urban Centres.In relation to archaeology.

Advertising
Applications for advertising and signage will be assessed under the proposed Guidelines.

Car and cycle parking standards

Use class	Maximum parking Spaces Required		Minimum cycle spaces required	*Further Assessment
	Town Centre Cell[11]	Suburbs		
Auditorium, Theatre, Cinema, Stadium	1 per 5 seats	1per 3seats	1 per 5 Seats	TIA will be required
Church	1 per 5 seats	1per 3seats	1 per 5 Seats	TIA will be required
Nursing Homes	1 per staff +1 per 3 beds	1 per staff +1 per 3 beds	1 per staff	TIA will be required
Third level colleges	1 per 2 staff	1 per 2 staff +1 per 3 students	1 per 3 students	TIA and Travel Plan will be required
Hotel[excluding Function Room]	1per rm+1coach space per 100rms.	1.5per rm+1coach space per 100rms	1per 3 staff+ 1 per 10 bedrooms	TIA will be required for Hotels with 50 bedrooms or more.
School [primary]	1 per classroom waiting facilities	1.5 classroom + waiting facilities	1 per 4 children	TIA and Travel Plan are required, including safer routes to school
School (secondary)	1 per classroom+ waiting facilities.	1.5 classroom + waiting facilities	1 per 2 children	TIA and Travel Plan are required, Including Safer routes to school
Hospital	1per 4 staff+1 per 1per 3 daily visitors	1per 4 staff+1 per 1per3 daily visitors	1per 4 staff +1 per 10 beds	TIA and Travel Plan may be required for a hospital over 2500m²
Clinic & Group medical practices	1 per consultant +1 per public room	1 per consultant +2-3 per public room	1 per staff +1 per public room	Assessment threshold to be Determined by planning officer.
Dwelling /Apartment	1.5 per unit + 1 visitor per 4 unit	1.5 per unit + 1 visitor per 4 unit	1 per unit(flat developments only)	TIA may be required for a Residential development over 200 dwellings
Boarding houses	1 per bedroom	1.5 per bedroom	1 per 2 bedrooms	Assessment threshold to be determined by planning officer
Warehousing	1 per 200m²+ 1 lorry space/400m²	1 per 100m²+ 1 lorry space/400m²	1 per 100m²	TIA may be required a warehousing unit over10,000m²
Retail Warehousing	3 per 100m²	5 per 100m²	3 Per 100m²	TIA may be required a retail Warehousingover 5,000m²
Library	2 per 100m²	3 Per 100m²	1per 4 staff +1 per 100m²	Not Required
Manufacturing	2 per 100m²	3 Per 100m²	2 per 100m²	TIA may be required for manufacturing siteOver 5,000m²
Offices	3 per 100m²	4 per 100m²	2 per 100m²	TIA may require for an office development over2,500m²
Take-away	4 per 100m²	6 per 100m²	1per 4 staff 4 per 100m²	Not required
Retailing	5 per 100m²+ lorry space/500m²	6 per 100m²+ lorry space/500m²	4 per 100m²	TIA may be required a retail warehousingover 1,000m²
Individual Shop	4 per 100m²	4 per 100m²	4 per 100m²	TIA may be required a retail warehousingover1,000m²
Bank or Financial Institution	3 Per 100m²	5 per 100m²	2 per 100m²	Assessment threshold to be Determined by Planning officer.
Restaurant Dining Room	8 Per 100m²	10 Per 100m²	1per 4 staff + 4 per 100m²	Assessment threshold to be Determined by Planning officer.
Ballroom, private dance clubs	2 per 100m²	5 per 100m²	1per 4 staff + 4 per 100m²	Assessment threshold to be determined by Planning officer
Bar, Lounges ,Function Rooms	8 Per 100m²	12 Per 100m²	1per 4 staff + 4 per 100m²	Assessment threshold to be determined by Planning officer
Bowling Alley	2 per lane	4 per lane	1per 4 staff + 2 per lane	Assessment threshold to be determined by Planning officer
Playing Field	10 per pitch	15 per pitch	10 per pitch	Not required
Marina	1 per berth	1 per berth	1 per 2 berths	Not required
Showrooms	2 per 100m²	2 per 100m²	2 per 100m²	Assessment threshold to be determined by Planning officer
Amuse/Entertain/Museum	2 per 100m²	4 per 100m²	1per 4 staff + 4 per 100m²	Assessment threshold to be determined by Planning officer

Garages	2 per 100m²	4 per 100m²	1per 4 staff + 4 per 100m²	Assessment threshold to be determined by Planning officer
Rail station	-	-	5/10 per peak period service	-
Bus stations	-	-	4 per bus bay	-
Bus stops	-	-	4 per stop	

**Generally development are subject to a transport Impact Assessment where traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists or the location is sensitive*

Reduced parking provision is desirable for the town centre, to help restrain traffic growth within the centre and encourage travel by –car modes within the central area, the planning authority may adopt a flexible approach to the parking standards, where a proposed Development is considered to be of a desirable benefit to the town.

Where the provision of on-site car parking is not possible, the council should require financial contribution towards the provision of car parking. When considering applications for developments that are not classified.

In appendix the location and function of the development should be taken into consideration in determining the standards that should apply.

Transport Impact Assessment (TIA) may be required where proposed developments will create a significant demand for travel development proposals.

Car parking layout
Where parking is permitted in sight of the general public, adequate landscaping must be provided to soften the appearance of the site. In commercial areas provision of parking at the rear of the development is desirable where preservation of the streetscape determines it.The minimum width of end-on and parallel parking bays to be determined by each Urban Centres. Detailed minimum aisle width s to be applied to be applied to parking stalls to be determined by each Urban Centres.

Loading bays
All new development for office, commercial or industrial use must include within the curtilage loading and unloading facilities sufficient to meet the demand of such development. Off street loading facilities shall conform to the following requirements:
Each loading bay must be no less than 6m long and 3m wide and must not obstruct the circular path of turning vehicles .There shall be appropriate means of access to a street and sufficient space for performing maneuvering on site.

Access for people with disabilities
Accesses requirements for people with disabilities must be incorporated in to the design of all buildings, public spaces and facilities that are to be used by the general public. A minimum of 5 percent of the total parking provision shall be allocated to disabled users for car parks with a capacity of 200 vehicles or less and 3 percent should be provided for car parks with a capacity of greater than 200 vehicles. Disabled parking spaces should be at least 3.3 m wide and 6m long to allow drivers and passengers to get out of the vehicle safely and access the rear of the vehicle for wheel chair storage. Parking bays for disabled users should be located close to the entrance of premises as possible.

Cycle Facilities
Provision should be made for secured cycle parking facilities for new extended development proposals based on the standards set out alongside the car parking standards in appendix The provision of safe parking facilities in close proximity to a destination is fundamental to attracting a modal shift from the private car and therefore the cycling standards are represented as a minimum.

Bicycle racks should be provided within 25 meters of a destination for short-term parking e.g. shops, and within 50 meters for long-term parking e.g. offices and schools. All long-term (more than 3 hours) cycle racks must be covered and shielded from the weather. In addition to the provision of secure parking, developers of large-scale sites may be required to demonstrate that they have considered other needs of the cyclists including lockers and changing areas. In exceptional cases, where the developers is unable to provide cycle parking facilities on site or in close proximity, the developer should be required to pay a contribution in lieu of the provision of cycle parking.

Utilities and Services Provision

The Planning Authority should provide sanitary services to facilitate the development of appropriate zoned lands. It should be assumed that because an area is indicated for development that applicants will automatically receive permission because they apparently apply with zoning objectives. The introduction of drainage of new areas will be on a strictly phased basis and until such time as services are available in an area, the Planning Authority may refuse permission on prematurity grounds. Applicants should be advised to consult the County Government in advance in regard to the availability of services, particularly in areas where there is some doubt to provide separate surface drains and storm drains, and where separate systems of sewerage are available or intended to be made available in the future. Developers shall be required to provide efficient surface water drain where possible. Sewers shall preferably be laid along roads and through open spaces.

Development in Flood Prone Areas

Where development is deemed appropriate, consideration must be given, at the planning stage, to avoid or minimizing flood risk to the new development and also to assessing the cumulative impact the development may have on other sites within the flood plain.

Septic Tanks

In exceptional circumstances, where no piped public sewerage facilities is available, or are unlikely to be available within a reasonable time, the Planning Authority may permit the use of septic tanks or other treatment works provided the development is of a sustainable character and density to be so serviced without creating a health hazard or nuisance. In deciding applications the Planning Authority should have regard to the advice of the public health department invariable consents would be conditional on the applicant connecting, at his own sole expense, to the public main drainage system whenever it is extended to this site. Consents will also be subject to a financial contribution towards the cost of further public sewerage facilities, which will facilitate, which will facilitate the development, notwithstanding the use of septic tanks, or other drainage in the interim.

Industrial Effluents

In the case of Industrial Effluents, developers and property owners will be required to ensure that effluent discharged has a Biochemical Oxygen Demand (B.O D)not in excess of that of domestic sewerage and that the Solids in Suspension (S.S) do not exceed 400 parts per million.

ANNEX IV: FORM PPAI

From p.p.a.1

Registered Number
of Application……

APPLICATION FOR DEVELOPMENT PERMISSION

(To be submitted in TRIPLICATE in respect of each transaction and sent to or left at appropriate office of the County government).

To the

……

……

(Insert Name and address of the appropriate County Government Office)

I/we hereby apply for permission to develop the land and/or building as described in this application and on the attached plains and drawings.

Date…… Signature of Applicant or

Agent……..

If signed by Agent state:

Name

……..……..

Address……..……

……

Profession……

……..……..

SECTION A- GENERAL INFORMATION

1) Owner's name and

   Address:……

   ……..……..

2) Applicant's name and

   address:……

   ……...…….

3) If applicant is not the owner, state interest in the land e.g. lease, prospective purchaser, etc. and whether the consent of the owner to this application has been obtained:
4) a . L.R. or Parcel No.:

   ……

   ……

   b . Road, District and Town:

   ……

   ……

c . Acreage:

……

……

5) If an application has been previously been submitted state the registered number of the application:

…….....
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SECTION B-SUBDIVISION

6) describe briefly the proposed sub-division including the purposes for which land/or buildings are to be used:

……
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……
……

7) State the purpose for which land and/ or buildings are now used. If not now used, the purpose for which and the date on which they were last used:……..……..

……
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……
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……

8) State whether the construction of a new or an alternative of an existing mean of access to or from a road is involved:…….....

……
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…….....

9) State method of :

a. Water supply:……
……

b. Sewerage disposal:………………………………………………………………………………………
………………………………………………………………………………………….

c. Surface water disposal:………………………………………………………………………………………
………………………………………………………………………………….………….

d. Refuse dsposal:…………………………………………………………………………………………
………………………………………..………………………………………………

10) Give details of any relevant easements affecting the proposed subdivision:………………………………………………………………………………………
…………………………………………………………………………………………………
……………………………………….……………………………………………………………
…………………………………………………………………………………………………
……………………………………………………………………………………

SECTION C- EXTENSION OF LEASE OR USER OR CHANGE OR USER

11) State whether subdivision is involved and if so whether permission has been applied for and if so give registered number of the application:……………………………………………………………………………….…..
....
....……………………………….……………………………………
……………………………………………………………….……..…………………………………
………………………………………………………………….……….....

12) Describe briefly the proposed development including the purpose for which land and/or buildings are to be used:…………………………………………………………………………………………
……………………..……………………………………………………………………………………
…………………………………………………………………………………………………
…………..……………………………………………………………………………………………
……………………………………………………………………………………

13) State the purpose for which land and/or buildings are now used. If not used, the purpose for which and date on which they were last used:……………………………………………………….……………………………..…………
…………………………………………………………………………………….………………
…………………………………………………………………………………………….

14) State whether the construction of a new or alternative of an existing mean of access to or from a road is involved:…………………………………………………………………………………………
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15) If the proposed development consists only of a change of user and does not involve building operations state exact nature of such change:……………………………………………………………….……………………………
……………………………………………………………………..,………………………………
…………………………………………………………………..……………………………………
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16) If the site abuts on road junction, give details and height of any proposed walls, fence, etc. fronting theron:……………………………………………………………………………………………
……………………………………………………………………………………………………
……………………………………………………………………………………………………
……………………………………………………………………………………………………
……………………………………………………………………………………………………
…………………………………………………………………….

17) State method of:
   a. Water supply:………………………………………………………………………………………
   ……………………………………………………………………….……………………………
   b. Sewerage disposal:……………………………………………………………………………………
   ……………………………………………………………………………………….
   c. Surface water disposal:……………………………………………………………………………………
   ……………………………………………………………………..……………….
   d. Refuse Disposal:……………………………………………………………………………………
   …………………………………………………………………………………

18) Give details of any relevant easements affecting the proposals:…………………………………………………………..………………………………
……………………………………………………………………………………………………
……………………………………………………………………………………………………
……………………………………………………………………………………………………
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19) State the:
   a. Water Supply:………………………………………………………………………………………
   ……………………………………………………………………………………….

b. Area covered by buildings:……
……...…

c. Percentage of site covered:……
……..……..

i. By existing buildings:
ii. By proposed buildings:

Note:- Drawing and specifications must be prepared and signed by a registered Physical Planner.

ANNEX V: NOTIFICATION OF APPROVAL OF DEVELOPMENT PERMISSION

Serial No:……

THE PHYSICAL PLANNING ACT (CAP 286)

OUR REF_____APPLICATIONREG. No: _____

Notification of approval of development permission

1. Sub-division
2. Sub-division and Amalgamation
3. Amalgamation
4. Change of Use
5. Expansion of Use
6. Extension of Lease

To

_____

_____

_____

Your application, numbered as above, submitted on:_____
Seeking Permission for: _____ofLR NO.:_____
Situate in: _____, _____Roadwas approved by the Town Planning Committee held on_____
Underitem_____subjectto the following conditions:

_____

_____

_____

_____

_____

_____

_____

Date:_____Signed:_____
Name: _____
For: _____

Copy:-

: CEC-Lands, Housing and Urban Development

: Director Lands. Housing and Urban Development

: The County Secretary

: The County Surveyors

: The Land Registrar

: Physical Planning Officer

ANNEX VI: WASTEGENERATION, DISCHARGE AND CLASSIFICATION

Waste Generation

The waste generation is usually represented by waste generation rate – the quantity of waste generated per person per day (kg/day/capital). To establish and monitor the waste generation rate is one essential data to manage the waste. But generally speaking, to know exact data of generation rate is difficult, so it is usually estimated through a random sampling survey. The generation rate is estimated by the average data of the survey result. The waste generations vary with the population, lifestyle, and economical activities of the area and seasonal events. Every urban area should carry out a baseline survey to establish the waste generation and there after monitor it annually.

Undertaking a Solid Waste Generation Survey:

1. **Set and Define Objectives:**
   i. To determine the volume required for on-site storage, transportation, transfer facilities and disposal of solid waste;
   ii. To identify recycling/resource recovery potential of solid waste;
   iii. To determine appropriate method of collection and disposal of solid waste; and
   iv. To estimate the expected life span of a disposal site.

2. **Anticipated Output:**
   i. Daily generation rates in Kg/person/day for residential waste and in g/esg./day for commercial waste;
   ii. Bulk density of solid waste generated in kg/L or in kg/m^3; and
   iii. Composition of solid waste generated in percentage by weight.

3. **Selection Sample Areas:**
   i. Define several residential areas which represent different socio-economic population groups(e.g. according to ethnic groups and/or income levels: low, middle and high income groups);
   ii. Select about 100 households for each of the residential areas defined in (1) above.
   iii. Identify a predominantly business area where a large number of shops and offices are located;
   iv. Select about 50 shops and offices for the business area defined in (3)above;
   v. Alternatively to (3) and (4), further divide the business areas into different categories such as hotels and restaurants , offices, shops and stores, workshops, and for each category select 10-20 samples;
   vi. Collect the waste generated in the above areas once a day at a fixed time for 8 successive days to allow variation in waste generation over a week. Note that the samples on the first day will be discarded as they may contain waste accumulated from 2 or more days before.

4. **Preparation:**
   i. Transport of waste-an open (pick -up) truck will be required to transport the waste collected to the dump site where all the measurement will be taken;
   ii. Workers-a driver and an assistant worker will be required for transportation of the waste. In addition, one or two collection workers will be required for each sample area to collect and load the waste on to the vehicle. At the dump site, two or three workers will be required to measure the weight and volume of waste, and separate it into different categories. A supervisor-cum-data recorder will also be required.
   iii. Equipment:

   Plastic bags -8(days)x (No. of households + No. of shops and offices);
   Weight scale-one or two to weight the waste with an accuracy of 100grams; and
   Buckets -a) to measure volume of waste; and

-b) to be used as a container for weighing
Plastic sheet -to spread waste over it for sorting; and
Gloves -for workers handling the waste.

iv. Assignment of numbers to households, shops and offices –for purpose of data recording analysis;
v. Coding of plastic bags by makers- according to the numbers signed to households, shops and offices;
vi. Data sheet –tentative examples are given in the annex 8.
vii. Survey family size and floor area –the number of persons in each household and the floor area of each shop and office will be recorded in the data sheets;
viii. Determination of collection route- the collection route will be recorded on a map;
ix. Determination of volume and weight -the volume and weight of a bucket will be measured and recorded; and
x. Give instruction to workers on how they should carry out their work. Distribution of leaflet and plastic bags –a leaflet, which explain the study and requests for cooperation, together with 8 plastic bags will be distributed to each households, shop and office in the sample area.

5. Procedures:

i. Collect the plastic bags from houses and shops/offices according to the prescribed collection route. In order to make this collection process efficient, the workers in each sample area may need to collect the bags and place them at a certain location prior to loading them on to the truck;
ii. Repeat (1) for each sample area and proceed to the dump site;
iii. Weigh each plastic bag and record the weight in the data sheets according to the numbers assigned to households, shops and offices;
iv. Select randomly 25 plastic bags from those collected in each sample area and record the households or shops/offices numbers of these bags in the data sheets for volume measurements;
v. Open these plastic bags and empty the contents into the bucket until it becomes full. The bucket will then be emptied and the contents will be spread over the plastic sheet. Repeat this process until all the bags for each sample area are emptied and count the number of bucketful loads, which will be recorded for the volume estimation;
vi. Separate the waste on the plastic sheet into different types (e.g. vegetables (putrescible matter), bones, paper, textiles, plastics, grass/leaves/wood, leather/rubber, metals, glass/ceramic, miscellaneous). The separated waste will be put into different buckets for weight measurement.
vii. Measure the weight of each type of waste and record it in the data sheet. (Annex 8.);
viii. Dump all the waste properly and clean the equipment used; and
ix. Repeat (1) to (8) every day for the duration of the study.

Waste Discharge

After waste is generated, people may dispose it off in a number of ways:

- On-site disposal – burning and/ or burial;
- On-site composting;
- Recycling, generally involving individual collectors visiting peoples' premises(homes, shops etc.) or people selling items directly to middlemen;
- Discharge for municipality's collection; and
- Illegal/open dumping.

The amount of waste discharged for collection is usually represented by waste discharge rate-the quantity of waste discharge for collection per person per day (kg/day/capita). The waste discharge rate is always less than the waste generation rate. The amount of waste discharged for collection also increases with economic growth. However, it is also strongly dependent on local conditions and the

relative proportions of waste disposed by other means. The waste discharge rate may be used for SWM planning in similar way to the waste generation rate.

Classification of Waste:
Characteristics of the contents in the solid waste can be classified as either biological, chemical of physical. These parameters are further used to define the nature of the wastes, their appropriate collection, and transportation and disposal methods.

The nature of solid waste can be categorized as hazardous or non-hazardous waste. Municipal waste usually comprise of both the hazardous and non-hazardous waste depending on their level of significance as far as environmental population is concerned. The physical composition of solid waste also varies between different societies and with income, as shown in Table 1.1 below;

Waste Constituent	**Lahore**	**Karachi, Pakistan**	**Tokyo, Japan**	**Nairobi**
➢ Organic;				54.0
➢ Compostable;				
➢ Food/Kitchen;	30.72	22.84	26.6	
➢ Grass/Wood; and	21.26	-	9.0	6.0
➢ Bones.	1.03	5.5	-	
Total	**53.01**	**28.34**	**35.6**	
Recyclable				
➢ Paper;	2.7	8.41	52.5	14.0
➢ Cardboard;	0.01	8.11	-	
➢ Plastic;	5.63	6.20	6.9	10.0
➢ Glass;	0.70	5.21	0.2	1.5
➢ Metal;	0.32	4.08	0.4	2.0
➢ Textile; and	7.45	8.93	4.0	3.0
➢ Leather.	-	-	-	8.0
Total	16.81	40.94	64.0	
Stone/brick	27.84	8.83	-	
Shoppers	-	6.49	-	
Rubber	-	-	-	1.0
Plastic wrapper	-	8.03	-	
Other	2.35	7.37	0.4	

Source:

1. Lahore data: Solid waste management department, Lahore;
2. Karachi data: solid waste management, Karachi 2005;
3. Tokyo, Japan from 1999; and
4. Nairobi, JICA report 1988.

In waste classification, **waste bulk density** 1 s used for selecting and sizing garbage storage containers, public pins and collection vehicles and for converting vehicle trips data to tonnages.

Moisture content is used for looking at treatment options, especially composting and incineration. **Carbon-nitrogen ratio** is useful for composting. **Calorific value** is useful for incineration.

Box 1.1 the Urban Centre Should:-

1.0 All Urban Centers should monitor the waste composition and waste bulk density annually
2.0 All medium sized Urban Centres above 50,000 populations should monitor moisture content and carbon-nitrogen ratio annually.
3.0 All large Urban Centres and Towns above 300,000 populations should monitor Calorific value annually.

ANNEX VII: WASTE MINIMIZATION

Waste minimization which includes reduction reuse and recycling is the first step of minimizing the environment negative impact and management cost. Reduction of waste basically means reducing waste by not producing it.

To minimize waste amount, it is necessary to enhance the following activities:

- Not to purchase unnecessary amount – it wastes not only your money but also the precious natural resource;
- Not to purchase disposal items;
- Reuse the materials;
- Purchasing durable, long lasting products;
- Seeking products and packaging that are as a free of toxic substances as possible; and
- Avoid issuance of carrier polythene bags by always using hand bag.

Recycling is widely practiced throughout the Country and primarily done by the informal sector which recovers s paper, carton, plastics, metals, glass and textiles. The waste is frequently scavenged in unsanitary conditions and sold through a chain of middlemen, peddlers, central collection depots and remanufacturing industries.

To achieve the objectives of waste reduction and waste recovery optimization that is safe, efficient and sustainable , local authorities need to consider the following programmes and lines of actions:-

a) Encourage re-use and recycling at homes and in industry implementation of cleaner production system. Hazardous waste should be collected separately at source. While formal material recovery facilities should also be put in place. This should enable these people to make a living while public health is being protected;
b) Set up pilot projects for waste segregation at source, for example separate collection of packing materials like plastic and paper/cardboard from schools, universities, segregation of waste into wet (organic) and dry(non-organic) components in a pilot urban areas. An NGO or private company could be involved in this;
c) Provide opportunities to formalize the informal sector, e.g. by employing scavengers on the picking lines of composting plants;
d) Consider the formation of cooperatives among scavengers to engage in kerbside collection of certain types of recyclables. Reserve a separate area at the disposal site for scavengers to search through the newly arrived waste, possibly spreading waste with loaders. Provide scavengers with protective gear and other facilities, as this will increase their efficiency and thus reduce the amount of waste to be disposed at landfills;
e) Encourage NGOs and private companies to establish community –based segregation at source, separate collection and waste recovery projects. Also encourage small and micro-scale waste recovery enterprises;
f) Formulation of policies, laws, regulations and by-laws that encourage waste minimization.

Box 1.1 The Urban Centers Should:-

All Urban Centers should undertake studies on how waste can be minimized and undertake a waste minimization Programme involving its residents and other stakeholders.

ANNEXVIII: WASTE COLLECTION AND TRANSPORTATION

Introduction

Existing waste collection and transport systems often cannot handle the amount of waste generated by large cities and town with growing populations. When this occurs, waste is disposed of in uncontrolled dumps or openly burned. Waste collection rate is estimated around 25-35% in Kenya. The type of unmonitored and uncontrolled waste disposal has negative consequences on human health and the environment.

Improvements to waste collection and transport can create jobs. Decrease open dumping and burning, increase appeal for tourism, and significantly improve public health. The process of refuse collection and transport should be thought of as a multiple process, and it is possible to define it inseparate phases.

Commercial solid waste collected with skips, large steel containers that are commonly lifted overhead by the collection truck. The size of the skips ranges from $7m^3$ to 30^3. as the driver of the truck. Doses not get out there is a risk of hazardous waste being placed in the skips. The waste therefore should be checked at the disposal site. If hazardous waste is found investigation should be done to identify the source and give warning of impending penalties.

Some commercial premises produce very large quantities of waste that the urban centers may wish require them to make their own arrangement of transporting it to the disposal site. lf however the local authority has set adequate charges for solid waste management services it should endeavor to provide the services.

Waste collection

This is referred to as the process whereby scattered pieces that make up solid wastes are gathered together in a temporary control point. Separate phases can be used to define the process of refuse collection. These are:

i. Premises to Waste Container

The premises to waste container phase does not receive attention in the waste collection system because the efficiencies and conveniences gained here are personal and out communal. It is nevertheless an important phase as it is the beginning point of interaction with the waste generators in the local authority it can also be used to reduce the waste and manage the revenues for solid waste management services. It is also important for resident to put waste in containers to avoid indiscriminate dumping of waste in neighborhood. Facilities to support waste management should for example; waste chutes should be incorporated in building plan.

First residents should be educated to accept that there waste must be placed in an appropriate container to facilitate efficient collection. Effort by urban centers should therefore promote a system where they set the standard of the type of containers that residents can buy on market. There is increasing use of plastics bags, on which the urban centers may wish to provide guidance.

The urban centers may wish to adopt a volume based charge as a way of encouraging reduction of waste at source. In this case the premises owners make a choice of the capacity of container and therefore the fee to pay. If separate at source is desirable the waste containers will have to be of different colours.

ii. Waste Container to Trucks

The concept of backyard and kerb-side collection have been mentioned. For safety of the waste collector and security of the residents kerb-side collection as opposed to backyard collection is more popular in many urban centres. The premises owner carries the waste to the roadside, often in plastic bag and leaves it there for the collectors to load in the refuse collection vehicle. It should be mentioned that some

urban centers use skips, placed at selected places, where residents place their waste. The skips are loaded on the refuse vehicles mechanically.

Waste Transport

Transportation of wastes is the process of transferring the collected wastes from the generation and collection points to transfer stations, material recovery facilities or final disposal point. Similarly, separate phases can be define this process. These are:-

a. Truck from Premises to Premises

The refuse vehicle moves from premises to premises collecting waste until it is full or the route is complete. The vehicle should be compacting the waste as it moves. In small urban centers/towns non compacting tractor trailer or side loader truck may be in use. However in large towns it is economical to use refuse vehicle which can compact the waste as it is moves along. An estimate of the number of premises a vehicle can serve in one trip may be done by approximation of the volume of waste per premises per premises and the capacity of the vehicle.

b. Truck Routing

The routing of a vehicle within its assigned zone is often called micro-routing to distinguish from the large scale problems of routing to the disposal site. The objective in micro-routing is to minimize deadheading, travelling without picking up refuse. The assumption is that if a route can be devised that has the least amount of dead heading as possible it is the most efficient route. The following set rules apply to micro-routing. Some of these are pure commonsensical judgments, and some are useful guidelines for determining overall strategy when preparing a routing model;

- Routes should not overlap, but should be compact and not be fragmented;
- The starting point should be as close to the truck garage as possible;
- Heavily travelled streets should be avoided during rush hours;
- One way street that cannot be traversed in one line should be looped from the upper end of the street;
- Dead-end streets should be collected when on the left side of the street;
- On hills, collection should proceed downhill so that the truck can coast;
- Clockwise turns around blocks be used whenever possible;
- Long, straight paths should be routed before looping clockwise.

These rules can be used to develop effective routes with minor deadheading.

c. Truck to Disposal Site

For small town, the macro- finding *macro-routing* in terms of developing the optimal disposal and transport scheme is more complex. The objectives are to minimize the transport cost. A balance has to be made between having one or more than one disposal site. Consideration will also be given to the need for transfers stations. In which case smaller vehicles will be used in collections from premises to transfer station and large vehicles used from transfer station to disposal site.

The urban centers should have a system of weighing waste as it enters the disposal site or transfer station.it is easy to monitor the waste collection amount. Control the waste and plan the future. Therefore, weighing the waste is an important step in managing the waste.

Taking into account that waste reduction measures could reduce the waste generated by up to 25-35% the urban centers should aim for a waste collection rate of between 65 and 75% of the waste generated in their jurisdiction and transportation of the same to material recovery facility or disposal site.

Box 4.1 The Urban Centers Should;

1. All urban centres should monitor the collection/disposal amount daily by developing a recording system with or without a weighing mechanism.
2. All large urban centres and towns above 300,000 populations should install weighbridge in each disposal/treatment site and monitor the amount daily**.**

Transfer Station

When the waste disposal unit is removed to the collection area. Atransfers station is employed. A t the transfers' station waste is transferred from smaller collection vehicles to larger transfer vehicles, such as tractor and trailer, a barge, or railroad car.

Transfer stations can be quite simple, or they can be complex facilities. The size of the facility is based on the intended use. With small transfer stations typically relaying on a tipping floor where collection vehicles drop their loads. Waste can then be loaded into open-top trailers using a wheel loader. More complex facilities might employ pits for vehicle to drop into.

The decision to build or not to build a transfer station is often an economic decision. If the one way haul distance from the point of full collection vehicle to the discharge point is short, then it is likely that no transfer station is needed. on the other hand , if the discharge point is far away and the collection vehicle will have to be away from its primary role of collecting refuse for too long, then transfer station might be warranted.

The relationships illustrated in figure 5.2. Where the two curves cross is the breakeven point. Longer distances will warrant the construction of a transfer station while shorter hauls will make it uneconomical. The urban centers should therefore as part of the feasibility study carry out cost comparison of the with transfer station and without transfers station options.

Collection ofRecyclableMaterial

Recyclable materials include:

- Paper and Paperboard;
- Glass;
- Ferrous metal;
- Aluminum;
- Other non-ferrous metals;
- Plastics;
- Rubber and leather;
- Textiles;
- Wood;
- Food Waste;
- Yard trimmings; and
- Other materials.

The urban centres should devise innovative methods of identifying recyclable and collecting them in a cost effective way. For example waste paper collectors could be registered and facilitate to collect paper water from premises to their own cost and a fee to the premises. The urban centres could establish a designated place for glass. A study of the market for recyclables is also important.

Litter and Street Cleanliness

Litter is a special type of urban centres solid waste (UCSW). It is distinct from other types of UCSW in that it is a solid waste that is not deposited into proper receptacles. Although litter mainly exists in public place, it could be on private premises as well. Litter removal from public places is expensive and requires special effort by the urban centres especially if the entire urban centres area has to be clean. Failure to attend to it will lead to dirty streets, blocked drains, etc.

Strategy for a Sustainable Waste Collection System

The urban centres as part of its solid waste management action plan should develop a strategy for waste collection with the objective of achieving efficient, and sustainable waste collection systems in its area of jurisdiction the aspects to take into account include:

a) Set up a system for regular weighing and analysis of wastes generated and collected (quantities, densities, organic content, dry recyclable content, moisture content). These data are essential to determine the most suitable methods of collection, transportation, disposal and treatment;
b) Develop standard designs for collection and transfer for all areas within the urban centers jurisdiction;
c) Establish primary collection system in the entire urban centres. A primary collection system means that waste is collected by small vehicles to a transfer point, from where it is collected by larger vehicles to the disposal site (secondary collection system);
d) Encourage collection of waste in plastic bags, as this reduces loading times for the waste collection crews. However, waste collection in plastic bags needs a fixed timing of the collection services, so that scavengers have minimal access to them;
e) Encourage door-to –door collection system in high and middle income areas against a cost covering fee. Kerbside, collection, where waste is collected in certain street and at corners, is more appropriate for low income urban areas possibly against a (low)fee;
f) Competent private collection companies and NGOs should be encouraged to develop community – based collection scheme;
g) Increase the number of containers and street bin and make their design compatible with collection and transportation systems. The design of containers should reduce unnecessary handing of the waste and make loading of vehicles easier. Containers should be heavy and/or chained to poles in order to minimize tipping over by scavengers. Their size should be adapted to quantities and densities of waste generated;
h) Increase the number of containers to collect institutional and industrial waste. Make the frequency of waste collection compatible with waste generation and the nature of the waste. When much organic waste is generated in a particular area like fruit and vegetable markets, collection should be daily or at least every other day to reduce unpleasant odours and the growth of disease vectors;
i) Improve vehicle selection, taking into account waste quantities and characteristic, the condition of roads and the distance, typically less than 10 km to the disposal site;
j) Trucks are more appropriate for long haul distances (More than 10 km),as their capital costs are much higher than for tractors. Compactor trucks are appropriate low density waste (typically less than 250kg/m^3 to collect i.e. waste that includes much packaging materials, plastic, paper, etc.) which may be the case in major urban cities. In rural and medium towns, where much of the waste consists of organic waste, dust and dirt, which has a high density, compactor trucks, are not suitable;
k) Establish regional collection system in rural areas, covering several villages and small urban centres; and
l) Establish proper monitoring and supervision mechanisms for waste collection and transportation to ensure reliability and satisfactory operation of the service. Facilitate the work of supervisors by providing those means of transportation and pay them incentives for good performance. Raise salaries and incentives of waste collection workers to increase their motivation and thus increase waste collection efficiency.

ANNEX IX: MATERIAL SEPARATION

As seen the bulk of solid waste generated from industry, households, etc. within a community is a complex mixture of different materials with very difficult properties and potential for reuse. Some materials are in a form that can be recycled directly while others need considerable further treatment before they can be utilized. Most modern waste management system therefore involve separation of the materials are delivered. Physical treatment of the waste materials to improve sorting efficiency and reduce storage and transport costs is typically part of the waste treatment.

Separation at the source

Re-use of solid waste material fractions is strongly dependent upon the quality of the materials. Source separation is typically used for materials that are easily recognizable and easily recyclable.lf a fraction of materials is contaminated with other types of materials it is more difficult to re-use as the contaminants may hamper further processing or decrease the quality of the final product made from the materials. Separation of the materials at their source of generation can prevent contamination altogether as the materials are never mixed and result in material fractions of much higher quality and purity than can be achieved by separation once the wastes have been mixed together.

Urban centres therefore need emphasis much on waste separation at source by investing much on public awareness. Source separation should always be considered in situations where the objective is to improve recycling and quality of waste materials. With the use of source separation it is possible to generate a large number of material fractions with a high level of purity, which gives a very high potential for recycling of the materials.

As source separation requires the participation of the citizens in the community it is important that the desired fractions can be clearly identified such that the risk of wrongly sorted materials kept at a minimum. A high level of information is required to educate the citizens in how to separate their wastes. Source separation typically also requires more equipment such as special container systems for sorting and collection vehicles with special rooms for the sorted materials.

Source separation systems have the potential of generating higher income when selling the sorted materials therefore it can be a source of returns on capital invested in SWM. Urban center need to help the public on spending more time. Their own wastes. Urban centre practice the decision of what fractions in which to sort the wastes is always trade-off between the costs in terms of equipment use and time spent the possibility of wrongly sorted materials in the fraction, and the economic gain from marketing the materials.

These materials include different types of paper, glass, plastic; aluminum cans organic wastes (food, garden) and metals. Other types of waste that are separated in some cases are furniture, house wares and other items that can be reused directly, in some case construction waste and similar materials may also be separated urban center need to establish by laws requiring that construction and demolition companies sort there for recycling.

Source Separation Systems

Types of source separation systems are based on different levels of citizen involvement and equipment's. Some general types of source separation systems include:

Special Container System

This system is typically based on a set of different containersin which to deposit the different waste fractions located at the source .Such container system would of course be different depending on the type of source, which could be either single homes, apartment complexes or industries. At single homes the sorting system could be a set of plastic boxes in which the waste s are sorted manually.

At apartment complexes with a central container system in the basement (or equivalent) and waste deposit hatches at each floor, separation could be done installing mechanical distribution system that will deposit the waste into the appropriate container. The container could be selected electronically at

a panel near the deposit hath before depositing the waste. Systems where the waste are sorted in to plastic bags of differentcoloursand then deposited in the same container can also render successful service.

The advantage of these types of systems is they require the least amount effort from the citizens and typically result in fractions of very high purity. Because they ease to use more wastes will be separated instead of ending up in the fraction of non-recyclable materials and therefore greater quantities of material can be recycled. These systems also makes it possible to collect all the waste fractions at the same time minimizing the amount of driving needed for collection and reducing transport costs. This means that there is no need to store waste materials at the source for longer periods. A major disadvantage is that the equipment costs for containers etc. are often high, as a large number of container systems are typically needed.

Communal Containers

The use of communal containers requires that the citizens bring their sorted waste materials to the containers. The container are typically located in a public place such as shopping Areas, parking lots or other public areas where people tend to pass by often.

An optimum location that people pass by on their way to or from work or while shopping will minimize the extra effort required for depositing the waste and result in increased quantities of sorted materials. Communal container is typically used for waste fraction such as paper, glass, metal, and aluminum cans. Often the containers are designed are designed such thatit is difficult to deposit other types of materials than those desired.

Communal containers separation system is less expensive to operate; as equipment require rents and collection frequency is significantly lower. However they are not suitable for sorting biodegradable waste fractions as these will start to decompose with sanitary problems as a result. These types of wastes should therefore be collected at the source using the separated system.

The disadvantages of communal containers is that more effort is required of the users, as they have to bring their wastes to the containers. The quantities of waste materials collected are therefore often lower than for systems with container at the source. The quantities of waste materials collected are therefore often lower than for systems with container at the source. The quantities collected per container is variable kin the early stages of implementation of this system after which it shows a slowly increasing trend. The initial variability will likely occur because the citizens in the community are not familiar with the separation system and it takes some time before they develop a routine for delivering the materials. Additional citizens becoming aware of the system, possibly because they see more containers in the streets or hear about it from other users etc. and therefore feel obligated to use the system explains the slowly increasing trend at later stages.

Recycling Stations

These are recovery or recycling facilities typically equipped with containers for collecting many different sorts of waste materials. The stations are usually connected to waste processing facilities such as an incinerator or composting facility and it is often possible to buy processed waste product such as compost at the recycling stations.

Users have to deliver their wastes to the station themselves. Recycling stations are used for delivery of construction or park and garden waste or other types of large waste items that are not easily handled by the public waste collection system. Urban centers should promote, subsidize, contract or empower persons or companies that have large quantities of wastes to employ this separation system.

Efficiency of Source Separation Systems

Efficiency of sources separation systems depends strongly on the user-friendliness of the system. In general will and high level of service and information results in high levels of separated waste quantities. Source separation system is sometimes characterized by their selectively.

The selectively depends mainly upon a good level of information about how to use the separation and what materials to sort whereas the participation factor in general depends upon how easy the source separation system is to use for the participants.

The separated materials will always contain some small fraction of unwanted materials (Contaminants) due to error in the separation process. These contaminants can cause difficulties during further treatment of the materials and can therefore reduce the value the value of the separated material.

Central Separation
Here, wastes are generally sorted at a central location where they are delivered after collection. Mechanical equipment are used to sort the commingled waste and only in special case is should manual separation be used due to problem with dust, bacteria and toxic substances obtained contained in wastes. Central separation should be primarily mechanical because of the high risk of exposure by the workers to pathogens or hazardous materials contained in the wastes but manual separation can only be considered only special cases where the waste consist of dry materials such as paper, cardboard and plastics.

Mechanical separation
Like dividing bulk waste into types and categories of material based on their recyclability and chemical composition, a stream of water materials can be divided into two or more sub-streams based on the physically properties of the particles in the stream. Mixed wasteis normally sorted in to the following fractions: combustibles, rocks etc, magnetic metals, other metals, a fine fraction and a rest fraction. Mechanical separation can also be applied to source separated wastes to generate more fractions of materials. Techniques for separating wastes mechanically include;

Screening- It is an efficient method for removing smaller particles such as dirt, small pieces of demolition wastes ash, etc from the main waste stream. The method less efficient for separating materials such as glass or paper from the waste stream. Screening can also is special cases be used to separate other types of materials as different types often consist of particles of different sizes.

Separation Based on Shape- The method is appropriate for separating waste fractions such as bricks, metal pipes, wooden beams, cardboard sheets etc. are associated with a specific shape and /or size.

Waste Materials Recovery Facilities (MRF)
This is a facility purposely designed to receive, sort and bail recyclable materials from collected urban solid waste. The processed materials can be marketed to clients as raw materials for production or otherwise.

Urban centres need to procure strategic partners for the provision of sustainable and reliable MRFs within their region. These partners would be mandated to provide waste recycling services which includes;

i. Receiving and processing all recyclable delivered in the facility from the generation points within the urban centers jurisdiction;
ii. Construct a modern facility characterized by latest technologies and labour balances;
iii. Provide sustainable and appropriate waste materials recovery alternatives the best suit specific regions within the urban centers;
iv. Set appropriate fees for operations within the facility;

v. Provide appropriate staff to carry out operation within the facility. The operators should maintain accurate records on various categories of waste materials processed at the facility including residue waste;
vi. Provide security measures within the locality of the facility to guarantee environmental protection; and
vii. Transport the residue waste from the facility to the final disposal points i.e landfill

ANNEX X: FINAL DISPOSAL

Finally disposal site is basically the place of neither reusable nor recyclable. But actually there are many valuable wastes and it attracts a lot of scavengers/waste pickers to recover the valuable wastes. Some items decompose very quickly (e.g. food/kitchen waste), while some take a long time (e.g. plastics -over 100 years) and others are hazardous or toxic (e.g. Batteries (Lead and Zinc), tube lights (Mercury). Hence, it is very important to practice good final disposal of waste for our sake and the sake our children, grandchildren and other children. For further detail, refer standard guidelines on solid waste disposal and landfill establishments.

Land-filling:

Types of Landfilling Structure
Landsite fill have been classified into five types, based on the microbial environments existing in the landfill layers, asfollows:

i. Anaerobic Landfill;
ii. Anaerobic Sanitary Landfill;
iii. Improved Anaerobic Sanitary Landfill;
iv. Semi-anaerobic (Sanitary)Landfill; and
v. Aerobic (Sanitary) Landfill.

Levels of Landfill
The level of improvement of sanitary landfill system can be achieved in four stages, namely**:**

i. Level I: Controlled Tipping;
ii. Level II: Sanitary Landfill with a bound and daily cover soil;
iii. Level III: Sanitary Landfill with leachate recirculation; and
iv. Level IV: Sanitary Landfill with leachate treatment and/or energy recovery.

In improving sanitary landfill system, it is more efficient if the works are carried out after having first determined the level of improvement to be achieved. This decision should be made after considering the site conditions at the proposed landfill site, the financial capability and the level of technology required for the improvement to be carried out by urban centres. The level of sanitary landfill system, its target, etc.

It is more realistic at the present moment to improve a sanitary landfill system in stages. It is also important that at the same time to consider the need to achieve a balances urban infrastructure improvement and aspects of urban environmental preservation.

Based on the above mentioned, the primary target of the improvement plan for sanitary landfill system should be at level III. The implementation Programme should contain a plan for continuous upgrading of the system in link with the financial and technical capability of the urban centre so that level IV may be obtained as early as possible.

Box 6.1 The UrbanCentres Should

1. All urban centres should do target at Level I;
2. All medium urban centres above 500,000 population at planning horizon should do target at level II; and
3. All large urban centres and cities above 300,000 population at planning horizon should do target at level III.

Incineration
Municipal solid waste incineration plants are among the most expensive solid waste management options since they require highly skilled personnel and carefully maintenance. For these reasons

incineration tends to be a good choice only when other simpler and less expensive choices are not available. However, it is an efficient way to reduce the waste volume and demand for landfill space. Incineration plants are located close to the points of generation thus reducing transportation costs.

Plant Ownership and Operation

An urban centres intending to invest on an incineration plant, must first undertake feasibility studies before implementation. It is important first to involve the public throughout the project cycle through awareness campaigns in the mass media and public hearings on major decisions with a direct community impact. Public participation beyond what is recommended for urban planning and environmental impacts assessment may be useful in dissolving public resistance to the project. To prepare an appropriate incineration project, an elaborate institutional framework and organization need to established. The project organization will develop appropriate agreement regarding capital investment, waste supply, energy sale, residue disposal as well as the necessary environmental impacts assessment.

Urban centers need to establishregulations on specific waste generators especially those generating hazardous waste e.g. medical, grease and fuel wastes etc. to invest on private incinerators with well recruited and trained staff for efficient operation in the incinerator.

Strategy for a Sustainable Waste Disposal and Treatment System

The urban center as part of its waste management action plan should develop a strategy for waste collection with the objectives of achieving sanitary disposal sites with reduced pollution to the environmental the aspects to take in to account include**:**

Disposal

a) Introduce controlled tipping practices at disposal sites to remove mal-odours, litter and other nuisance and to minimize the problem of flies and vermin. Use construction waste and sand as a top layer. Ensure the working equipment such as bulldozers is available at the disposal sites to level the waste. There should be sanitary landfill with leachate treatment facility;
b) Select new disposal sites to replace disposal sites that are close to full or that are improperly located. Before granting an approval for establishment of sanitary landfill site, the project proponent should undertake and Environmental Impact Assessment identifying potential damage of the disposal site to soil, water and air, and to suggest mitigation measures which should be implemented;
c) Identify possible regional disposal sites in view of the scarcity of available land in adjoining cities;
d) Improve the working conditions of scavengers on disposal sites, because this will improve their health and it increase the life of the disposal site and waste recovery levels;
e) Give the rights to waste recovery to a waste dealer who pays the urban monthly fee and has exclusive access to the recovered materials picked by the scavengers. Funds raised in this way can be used to maintain and operate the site;
f) Incineration is not considered an option for the treatment of urban waste due to its high operating and maintenance costs and the low calorific value of waste, but it is the recommended solution for the treatment of clinical and industrial hazardous waste; and
g) Carry out environmental impact audits for existing disposal sites.

Composting

a) Composting is only feasible and appropriate, when quantities of waste and organic content of the waste are high enough, and when there is a market for its product (compost and dry recyclable). This makes composting plants not suitable for areas where much of the waste consists of dirt or dust;
b) Carry out feasibility and marketing studies for both organic and inorganic materials before any composting plant or recovery unit is installed. Study the prevailing rate of waste recovery, as this has a major influence on the amount of raw material available to the composting plant thus on its output and revenue;

c) Select proper disposal sites, when new composting plants are being planned. Composting plants are only a partial solution to the waste problem, as non-compostable waste and reject still need to be disposed of;
d) Investigate opportunities for co-composting with animal waste and/or dried sewage sludge to solve two problems in one time. This will increase the nutritional value of the compost and the moisture content of the raw materials;
e) Introduce segregation at source of organic waste and separate collection in pilot areas, as this will improve the quality of compost and of dry recyclable, and thus their quality and price. This needs adequate awareness-raising efforts and possibly incentives for the communities involved. Depending on its success it could be extended to other areas;
f) Avoid mixing of urban waste with infectious clinical and industrial waste, especially when waste is collected for composting, as this endangers the life of workers at the picking belt and the quality of the compost; and
g) Develop maintenance Programme. Design training programmes for staff of composting plants to improve their technical, management and marketing skills. Encourage private to develop and maintain composting plants.

Target Level of Landfill

The introduction of an advanced sanitary landfill system requires a large amount of capital investment. Taking into consideration of the size of the urban centres annual budget and financial situation, we can expect various problems with regards to funding for the sanitary landfill system.