

**URBAN SUSTAINABLE DEVELOPMENT GOALS (USDGs)  
TARGETS AND INDICATORS: THE CASE OF KISUMU**

**FINAL DRAFT REPORT  
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<p><b>Jaramogi Oginga Odinga University of Science and Technology (JOOUST)</b></p> <p>The City of Kisumu</p>	<p><b>Project implementation team</b>  <b>Project monitoring:</b> International coordinator, Dr. Helen Arfvidsson (Sweden)</p> <p><b>Project Coordination and facilitation:</b> Prof. Stephen Agong and Mr. Alfred Otom</p> <p><b>Local Research team;</b></p> <table data-bbox="686 526 1332 638"> <tr> <td>1. Doris Ombara</td> <td>Lead researcher</td> </tr> <tr> <td>2. Michael Oloko</td> <td>Co-researcher</td> </tr> <tr> <td>3. Charles Nyambuga</td> <td>Co-researcher</td> </tr> </table>	1. Doris Ombara	Lead researcher	2. Michael Oloko	Co-researcher	3. Charles Nyambuga	Co-researcher
1. Doris Ombara	Lead researcher						
2. Michael Oloko	Co-researcher						
3. Charles Nyambuga	Co-researcher						

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## **1 PROJECT BACKGROUND INFORMATION**

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Over the last one year, there has been campaign to create urban goals within the SDGs to replace the MDGs by January, 2016. The continuing trend of urbanization projects 70% of the world population and 86% in OECD countries living in urban areas by 2050 (OECD, 2012). USDGs are explicitly urban and focus on problems which are unique, complex and very different from conventionally rural problems. If these problems are addressed in urban areas, handling similar ones in rural areas would be easier. The challenge is on how the USDGs would work in a way that it would be much more representative of the world cities as a whole.

The Local Interactive Platforms (e.g. KLIP) present an interesting opportunity as a set of large and intermediary cities of varied population spread across the world and can be used to test the USDGs. The idea of this project is to use the platforms to undertake very targeted short term work to test whether short term targets and indicators, as given by campaign group in Bangalore 12<sup>th</sup> -14<sup>th</sup> January, 2015, make sense or are realistic for urban areas/cities around the world to practically report on annual basis over the 15 years beginning 2016 to 2030.

This project is expected to provide guiding information necessary for annual reporting purposes for the case of Kisumu City and present comparative work with regard to these indicators among the various platforms or cities; Kisumu, Cape Town, Gothenburg and Manchester, with focus on adaptation to local situations in each case. It involved gathering information which was looked at under three scenarios;

1. Information and data already existing and is in use; that might have been easy to collect and just needed retrieval from where it is kept or specific documents.
2. Information and data that might exist but not in use; Might have required more efforts to collect.
3. Information and data that did not exist/ had not been collected but would be of use in the project. That which would involve some surveys or data collection, might require some expenditure or which might have been too expensive. What can be done every year and the related annual costs to acquire the information i.e. annual reporting cost requirements/implications with regard to particular information? What it takes to acquire actual records every year? How much effort would it take to collect it? Annual costs.

The study was undertaken together with the City officials and provided a platform of assessing the relevance of the indicators to Kisumu city as well as the City's capacity to annually report on the indicators. It was also realized that this study and the annual reporting process can monitor and inform development planning for the city and even prompt enactment of certain legislations which would otherwise be ignored or be overtaken by the unplanned development process, e.g protection of green public spaces, cultural and heritage sites which delay to be gazetted.

### **1.1 Project objective**

To use Local Interactive Platform (KLIP) to test whether short term targets and indicators as presented in the Second Urban Sustainable Development Goal Campaign Consultation (Bangalore document) make sense or are realistic to practically report on annual basis for 15 years starting from 2016 to 2030 in the case of Kisumu and for comparative purposes in relations to other cities in the world.

**Questions to be answered with regard to various targets shall include;** What is on the ground? What is the City doing? What are the strategies or plans in place by the City? What is the current situation? What are the future expectations?

### 1.2 Project workplan and timelines

The project was expected to take three months for data collection, field work, data analysis and report writing. Three progress reports were expected within the project period. There after a workshop and an overall comparative project report are to be undertaken within the fourth month. The details of the workplan are as indicated in the table below.

Target	Activities	Days	Feb	March	April	May	June
	Inception meeting	1	■				
	Project team planning retreat	1		■			
	Documents identification and Review	2		■ ■			
	Development of data collection tools	4		■ ■ ■ ■			
	Training of enumerators	2		■ ■			
	Testing of the tools	2			■ ■		
11.1	Mapping; Demarcate slum or informal settlement and residential areas within the City of Kisumu				■ ■ ■ ■		
	Secondary data collection		■ ■ ■ ■ ■ ■ ■ ■				
	Survey				■ ■ ■ ■ ■ ■ ■ ■		
	Presentation of results					■ ■ ■ ■ ■ ■ ■ ■	
11.2	Classify the residential areas, Map out public transport network				■ ■ ■ ■ ■ ■ ■ ■		
	Survey				■ ■ ■ ■ ■ ■ ■ ■		
11.3	Demographic information of the city, land use efficiency, bench marks, land consumption and population growth rate.			■ ■ ■ ■ ■ ■ ■ ■			
11.4	Music, dances, museums, parks, social centres-Ofafa,				■ ■ ■ ■ ■ ■ ■ ■		
11.5 and 11.b	Percent of cities with more than 100,000 inhabitants that are implementing risk reduction and resilience strategies informed by accepted international frameworks (such as forthcoming Hyogo-2				■ ■ ■ ■ ■ ■ ■ ■		

	Framework).																		
11.6	Percentage of urban solid waste regularly collected and well managed																		
11.7	Area of public space as a proportion of total city space.																		
11.a	Presence of a national urban and human settlements policy framework.																		
11.c	Sub-national government revenues and expenditures as a percentage of general government revenues and expenditures																		
	Report writing																		
	Workshop																		
	Overall comparative project report																		

### 1.3 Comments on work plan and implementation

The workplan was largely adhered to except for the third and final report which were submitted a few days late due to non submission or acquisition of critical data from other stakeholders such as Kenya National Bureau of Statistics, satellite images for Kisumu City and information from the Police Service.

## 1.4 Overview of Kisumu City

Kisumu is the third largest city in Kenya and one of the fastest growing cities in the country. It is located at 0°6' South of the Equator and 34°45' East and stands at 1,146 m above sea level on the Eastern shore of Lake Victoria, the continent's largest fresh-water body (68,800 sq.km) in the world and covers an area of 417 Km<sup>2</sup>, about 31% of which is under water. See Figure 1: Location of Kisumu and the administrative boundary in annex I. It is located in Kisumu County and serves as the principal city in the region. It developed progressively from a railway terminus and internal port in 1901, the City has become one of the leading communication and trading confluence for the Great Lakes region (Tanzania, Uganda, Rwanda and Burundi). Both location and trading activities have attracted population to the Kisumu area, in growing numbers over the years with steady population growth and the city expanding well beyond its boundary. Demographic projections to 2030 for Africa predicts both higher population growth and density as well as areal expansion for Kisumu City (Isud document)

The population of the City has rapidly been increasing, at a growth rate of 2.1%. Its current population is estimated at 457,834 people. Having the highest population density (10,000 people per km<sup>2</sup>), the peri-urban area houses more than 50% of the total population, (*Kisumu City Development Strategy*, MCK, 2004 and Figure 19).

The weather for the City has tropical characteristics due to the altitude; days are generally hot and hazy with a marked contrast between (i) the hot dry plains, (ii) the hot humid areas on the lake shore and south of the city and, (iii) the cooler highlands and plateaux to the North.

The need for proper urban planning is therefore critical for Kisumu City and must be strategic to take into account predictable population influx and the demand for services that comes with increased population. The areas of focus include; Land management and land use distribution to accommodate various uses (e.g. housing, industrial and commercial, social facilities, open spaces and maintaining space for agricultural production), location and construction of major facilities e.g. port, airport, train stations and future space requirements and accessibility, Road network and transportation system with alignment allowing for increased traffic and for public transportation, Water supply and sewerage, power supply and adequate Performance and Environmental management in order to restore and maintain key assets such as the lake and all its potentialities.

The urban Areas and Cities Act 2011, has charged the Kisumu City Council with the task of planning, management and development of the City (The Kenya Constitution, 2010).

## 1.5 Methodology

This involved a number of activities that include; literature review, mapping works, field surveys and coordination with stakeholders/institutions with relevant information to acquire data, process the data and analyze it to report on the indicators.

Mapping of the Kisumu City was carried out using the available and acquired resources to establish administrative boundaries as per locations and sub locations and identification of census divisions (enumeration areas and sub location level subdivisions).

Kisumu City 2009 Population census information with projections based annual growth rates was acquired to establish the City's population.

The study also involved acquisition of satellite images of Kisumu City and use of a numbers of GIS facilities and processes to collect spatial data and carry out a detailed spatial data analysis within the City's environment. The City's capacity to annually undertake the activities to report on the USDG's targets and the indicators was also assessed.

Procedure of mapping out the urban agglomeration's boundaries involved use of satellite image to digitize the built-up area and identify the urban agglomeration area as a dense built-up or densely populated area forming continuous settlement and functionally depend on the main urban area in terms of employment and services. Portions of the City areas that exhibit more of rural characteristics are not included within the urban agglomeration area.

Slum or informal settlement areas were similarly delineated and digitized. The City's road network digitized and identified public transport routes and buffered them according to establish the areas open public spaces within the City agglomeration/urban area were also identified and digitized.

The study also involved identification of main institutions with information and the nature of collaboration required that would give accurate annual reporting on the targets and indicators.

A survey was designed to collect relevant data and for the sake of annually reporting on the USDG targets and indicators, it is expected that a similar survey shall be undertaken annually. The analysis of survey data should be expected to mainly provide answers to the following issues;

- Proportion of population that spends more than 30% of its income on accommodation (11.1Sec).
- Frequencies of public transport movement around the areas selected (11.2).
- Public transport preference (11.2)
- the percentage of revenues that are either raised by, or allocated to, sub-national governments (regional and local governments) as a proportion of general government revenue (11.c);(The County and the City Budget and Revenues (11.4, 11.c)
- The percentage of total public expenditure undertaken by sub-national levels of government as a proportion of general government spending (excluding social security funds and public corporations)(11.c).
- Identification of cultural and natural heritage sites (11.4)
- Number of reported crimes (homicides, injures and theft rates) committed annually in urban areas, per 100,000 population (11.7.4S)



For survey purposes, Kisumu City was divided into four classes; low income, lower middle income, upper middle income and high income levels. The survey involved enumerators focusing on four of the selected points in each area.

In the four selected areas too there was a survey interview that concentrated on collecting data on the usage of public transport, mean daily travel time, the percentage of income that is used in rent and energy use/efficiency and preferences.

The population of the study used is that of Migosi sub location, Nyalenda B sub location, Southern and Northern sub locations. These areas population constituted the study population while the sample procedure used constituted the random walk. The starting point for the random walk was the office of the sub chief in each of the Sub locations named. The Mugenda Mugenda sample size formula table was used to determine the sample size per sub- location that has been pre- selected.

### **1.6 Importance of the project**

- The city will be able to report on the goals especially when approved eventually.
- Identify deficient areas for possible interventions.
- Prioritize urban development agenda within the county or nationally.
- Attract funding to the deficiencies in urban areas.
- Act as stock taking exercise for the City of Kisumu.
- Act as spring board for potential investors using it as a base to justify investment in Kisumu in identified deficient areas.

### **1.7 Major stakeholders with interest in the targets and indicators**

- Kisumu County Government
- The City of Kisumu
- Department of Environment, City of Kisumu
- Planning Department, City of Kisumu
- Kisumu Urban Project (KUP)

### **1.8 Annual reporting on targets and indicators**

Institutions to collaborate to ensure accurate annual on reporting on the targets and indicators include; Kenya National Bureau of Statistics (KNBS) National and Regional/County offices, Regional Centre for Mapping of Resources for Development (RCMRD), KLIP, Jaramogi Oginga Odinga University of Science and Technology (JOUST) and the City itself). The institutions to come up with an annual framework of operations.

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## 2.0 TARGET 11.1

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**Target 11.1** By 2030, ensure access of all adequate, safe and affordable housing and basic services including the upgrading of slums.

**Indicator 11.1;** Percentage of urban population living in slums or informal settlements.

**Rationale and definition:** This indicator measures the percentage of the urban population living in slums or informal settlements, as defined by UN-Habitat. The conditions looked at include; the nature of the houses as semi-permanent houses, paper houses or mud houses, the land tenure ship as either being permanent or not, congestion in terms of habitation in these houses and availability of services as electricity supply and running water.

It requires determination of the boundary of the City area and the identification of the slum/informal areas as well as the total population within the City and that within slum/informal settlement area.

### 2.1 Overview of population and settlement pattern in Kisumu City

Kenya experiences rapid population increase especially in urban areas- the 2009 Census shows that the population has grown by 10 million since the last census in 1999 and urban population is growing even faster (Government of Kenya, 2010).

Kisumu City's population has grown from less than 50,000 inhabitants in 1969 to 404,160 in 2009 as per the 2009 National Population Census See Table 1: Kisumu City 2009 population census in the annex II. With an annual population growth rates of 2.1% (Ministry of Devolution and Planning, 2013) the population projection for 2015 is 457834. This rapid population growth rate can be attributed to changes in natural growth, migration patterns and local authority boundaries, which have moved from about 19 km<sup>2</sup> in 1969 to the current 290 km<sup>2</sup>.

The City's urban foot print covers an area of 103km<sup>2</sup> with a population of **296,977** and contains the formal area with the CBD and the peri urban/informal settlement. See Figure 2: Urban foot print.

The core urban area is ring fenced by peri urban areas/informal settlements of Nyalenda A and B to the southeast, Manyatta A and B to the east, Kanyakwar (Obunga and Nyawita areas) to the north and Kogony and Bandani in the west from the extended urban areas of Kanyakwar extending up to Riat Hills, Konya and Wathorego. The CBD is well-developed with formal urban structures. It consists of main business areas and planned residential estates covering 17.02 km<sup>2</sup> and accommodating about 15% of the total urban population. See Figure 3: The CBD with main business areas and planned residential estates in annex I.

Parts of Manyatta A have progressively seen a change towards planned urban development in the areas of housing, roads and water and sewage, in the settlement areas of Lolwe, Migosi and Kenya Reinsurance Estates. New properly planned housing schemes are coming up in the lower Kanyakwar areas. The city area can be classified as either formal or informal settlement. Within the informal settlements houses are not permanent in nature and have higher occurrence of unplanned settlements and also possess the characteristics found in the

UN definition. The formal areas consist of planned and approved structures. Formal settlements are mostly approved by the City of Kisumu and have provisions for piped water, sewerage system, electricity and less congested. The other parts are considered as peri-urban having mixed characteristics of urban and rural.

The peri urban/informal settlement has a population of 188,971 staying within an area of 48km<sup>2</sup>. This therefore indicates that **64%** of the City's urban population resides in non-formal settlements (slums) and the peri-urban areas. See Figure 4: Informal and formal settlement in Annex I.

**Indicator determination:** This indicator is calculated by taking the number of people living in slums/informal area of a city divided by the total population of the city, expressed as a percentage. At the country level, this percentage is calculated by taking the total number of people living in slums of all the cities of a country divided by the total population living in all the cities of the given country.

In Kisumu the total population living in informal settlement is 188,971. The total population within the City's urban area(urban agglomeration; the built-up or densely populated area containing the city proper; suburbs, and continuously settled commuter areas-**Un Habitat,2009.**) is**296,977**. See Figure 4: Formal and informal settlements. For this study population within urban agglomeration is used to avoid areas with rural characteristics even though the rural area changes as the built up areas extends into it.

Indicator Value: **64%**

This indicator lumps the areas though it has been noted that some portions within these regions show progressive planned development patterns. For more accuracy there is need to identify these areas and treat them differently by not including them under informal settlements. For improved accuracy this study has used detailed data from KNBS that identifies these small areas in terms of Enumeration areas (EAs), villages and classifies them in terms of types; rural, urban or peri urban. The status of the villages too is identified as being either formal or informal.

**Assumption:** Common understanding of definition and extent of a city and a slum. Definition of slum is based on UN-Habitat household level definition. In this study, Kisumu is considered to be in three parts; Urban (Built, CBD) within the centre, Peri-urban (informal) ring fencing the urban area and the extended Urban areas exhibiting rural characteristics.

**Data sources availability and analysis:** The critical data sources in this section are the existing household-level survey and census data by the Kenya National Bureau of Statistics. Some of the information is free e.g. population data which is cascaded to the sub location level. Any other information and mapping resource from KNBS is bought. Prior arrangements can be made by the City in collaboration with KNBS to avail this information on an annual basis. This can be through a memorandum of understanding (MOU) with KNBS to ease data access for the sake of reporting.

The City needs to have aGIS software and the required GIS equipments as well as the expertise to analyze the data and present the value of the indicator as accurately as possible.

A group of experts will be required to examine the city areas more thoroughly based on are units considered by KNBS during the national census exercises.

At the time of this research, the city of Kisumu did not have any GIS and population data available within its offices. Data existed in other institutions e.g. KNBS-Population data which was acquired at a cost and Un-habitat-2005 satellite image. Minimal GIS expertise was available at the City planning Office.

**Observations:** *The research team felt that the term slum sometimes appears derogative and backwards and as such prefers the term informal settlement for use or any other better term.*

Kenya carries out National Census every 10 years and the population information used to determine this indicator should be based on the National Census. Projections are done to get values for other years before the next Census is carried out. This also comes out with map resources that can be updated. The City management therefore needs to take keen interest in census exercises and even include some of the parameters which are relevant to this indicator.

### **2.3 Proportion of income spent on accommodation (sec. Indicator)**

**Secondary Indicator:** (1) Proportion of population that spends more than 30% of its income on accommodation (as an alternative to incorporating affordability as a sixth element into the definition of a slum household, described above)

**Data sources, availability and analysis:** Data was collected through a field survey to establish income levels and expenditure on accommodation for various parts of the City. The research team consolidated a team of university students to conduct field survey to establish the proportion of population that spends more than 30% of its income on accommodation. The City was divided into four categories; low income, lower middle income, upper middle income and high income. These areas are Milimani to represent high income zoning, Kenya Re which represents upper middle class, Migosi to represent the low middle class while Nyalenda which represents the low income class.

From field survey data analysis, it was found that none of those in high income levels namely Milimani spend more than 30% on accommodation. See Table 2: Proportion of income spent on rent. In Upper middle class which is represented by Kenya Re, 36% of the residents spend more than 30% of their income on accommodation. In Migosi which is categorised as lower middle class 44% spend above 30% of their income on accommodation. This thus shows that those who stay in Milimani have a high income level and mostly stay in their own houses, thus the score of 0% of those who spend more than 30% of their income on accommodation. The surplus income which could have been dedicated to accommodation in the household is probably used for private transport and acquisition of own accommodation. Nyalenda which has a lot of informal settlements has 35% of the population spending more than 30% of their income on accommodation. This reflects the fact that the residents of these areas do not have much leeway to spend their income on anything else but house rent.

Analysis require accurate determination of different classes of income levels within the city by a group of experts and determining the population within these areas based on population data acquired from KNBS. There was a determination of the proportion of population who spend more than 30% of their income on accommodation in these classes through a field survey. The result is then used to determine total population in the city spending more than 30% of their income on accommodation. See analysis as demonstrated in Table 3

**Indicator Value: 37%**

Observation: This indicator is relevant to Kisumu and it can be determined through a survey to be carried out annually. The City should make arrangements with guidance from any research institutions or consultant, for field survey to annually report on this indicator. This indicator is critical for the case of Kisumu City. As it links one of the greatest human needs i.e. shelter and what is required to secure the need i.e. income. Although individual's income levels, determines where one stays, it does not always happen so in Kisumu. For some other reasons, many people of high income levels stay in informal settlements and are not keen in relocating. The indicator is independent on geographical locations and as such is more relevant to indicator 11.2.1. The research team felt that it is realistic and feasible given the costs and time required to determine the indicator.

Where one stays sometimes is determined by land tenure. Kisumu City is expanding into free-hold area where land ownership is by the native community, which allow new residents to buy land and stay within them but remain within regardless of their economic status. The result is both low and high income persons staying within the same area in varying proportions.

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### 3.0 TARGET 11.2

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**Target 11.2;** By 2030 provide access to safe affordable, energy, efficient and accessible transport system for all people and goods improving road safety and expanding public and transport. In this target access to safe affordable energy efficiency is assessed.

**Indicator 11.2.1:** Percentage of people within 0.5 km of public transit running at least every 20 minutes.

Rationale and definition: This indicator measures access to reliable public transportation, using a proxy of percentage of population within [0.5] kilometres of public transit running at least every [20] minutes. Public transportation is defined as a shared passenger transport service that is available to the general public. The Kisumu residents rely on individual or group registered passengers' service vehicles. Those operating bicycles and motor cycles also operate in groups that may be formal or informal. It includes; buses, mini buses, matatus (14 seater vans), saloon cars in registered routes, Tuk-tuk, motor cycles and bicycles. Taxis, car pools, and hired buses, which are not shared by strangers without prior arrangements, are excluded.

**Data sources, availability and analysis:** Data collection involves identification of registered public routes within the city area and digitizing them. (See Figure 5: Buffered public transport routes and Figure 6: Average number of public transit across location, day and period of day and Figure 10: Road network within urban foot print) and carrying out field survey to determine frequency of public transport through the routes. See Figure 6; Number of public transport for all types of public transit.

The public transport routes of the town were established presented in a map. The Map shows the public transport routes that pass through the selected areas. The routes were buffered to provide for up to 0.5 Km area coverage from either side of the routes to include the population that are assumed to use the public transport routes (Figure 5). Public transport modes in this study are listed as follows: TukTuk, Matatu, Bus, Pikipiki (motor bike) and non-motorized bicycles.

Through use of GIS, the routes are buffered and areas which are covered are also identified. Using population information from KNBS, population densities within the buffered areas are determined and the city population living within the buffered area determined. See Table 5: Public transport buffered area and the population. The population within these areas is 162,188.

**Indicator Determination:** The indicator is determined as a proportion of population living within the buffered area to the total city population.

Indicator Value: 55%

It requires use of satellite images and other maps to digitize the public transport routes. Therefore requires GIS expertise and facilities. Also requires a small group of experts to determine some of the required parameters more accurately.

**Observation:** Most of the people who are living within the CBD and the peri-urban ring fencing the CBD i.e. Town, Kolwa West and Kondele locations have reliable transport system. See Table 5: Public transport buffered area and the population.

The indicator might not be accurate as it has no indications that the person concerned has reached his/her destination. It does not consider the capacity of the public transport means.

It was also noticed that the City council of Kisumu had minimal control over the kind of means of transport in various routes. Some routes especially Nyalenda is dominated by Tuk-tuk (two seater) which have pushed out higher capacity vehicles.

The capacity of public transport facilities considered may be too small and thus could create no significant impact but may indicate inefficient use of energy and increased traffic congestion.

New public transport routes are identified from time to time depending on demand for public transport and opportunities for public transport organizations or even individuals. The population within 0.5km from these routes is therefore similarly expected to change from time to time.

**Indicator 11.2.2:** Share of income spent by urban households on transport (by income quintile)

**Data sources, availability and analysis:** Data collection was by field survey. The town is sub divided into four zones/quintiles namely; the high class as represented by Milimani area, the upper middle class as represented by Kenya Re estates, lower middle class as represented by Migosi estate. The low class is represented by Nyalenda Estate. Population data from KNBS was used in the analysis.

The survey was also used to establish the preferred mode of transport and the reasons for the preference.

**Observation:** Figure 8 shows the percentage of income that respondents spent on transport. It is evident that as expected, the typical response was lowest at 5-25% across all locations. However, the most varied group in terms of percentage income spent on transport was Milimani with the highest being 50-75% and the least varied was Nyalenda with the highest being 25-50%. The implication of this is that those staying in Milimani spend most of their income on transport as compared to those who stay in the low end Nyalenda estate. This could be because those who stay in Nyalenda use cheaper modes of transport such as bicycles, tuktuk and motorbikes as compared to those who stay in Milimani and Kenya Re

who augment these modes of transport with private transport systems and use of the heavier motorised modes of transport.

In the case of Milimani, 8 persons did not respond. See table 4: Percentage of income spent by income quintiles on transport. This could mean that they do not spend their income on transport or what they spend on transport is minimal.

On the preferred mode of transport; Migosi and Kenya-Re residents used Matatu more than any other mode followed by use of private vehicle. Nyalenda residents, however, preferred the use of Tuk Tuk followed by Motor Bike. In contrast to this, Milimani residents tended to use private vehicle more than other means of transport when going to work. Cost was the main determinant of choice of transport mode by family members although Milimani respondents thought that comfort was equally important.

The indicator is not specific on the level of share of income (e.g. 30% of income) spent on transport for uniformity and clarity. Procedure for determining income quintile needs to be standardized. For the case of Kisumu, the study team used four classes; low income, lower middle, upper middle and high income which may vary from city to city.

Other indicators for urban access to sustainable transport that include: mean daily travel time. The mean daily travel time could be a function of the distance to workplace, time wasted in traffic jams, the status of the roads as well as the mode of transport used. The research team feels that considerations be made to include these aspects to create impacts on mean daily travel time.

**Types and frequency of public transit:** For the average number of public transit across location,, Nyalenda recorded the highest number of public transit, followed by Migosi, Milimani and Kenya-Re, in that order. The implication of this is that as stated above Nyalenda predominantly depend on public transport network while the other three estates tend to add usage of private transport too to add to augment public transport system.

For the number of public transit recorded at each data collection point for all types of motorized and non-motorized public transit, during the peak morning period, the highest number of public transit was recorded. For the off-peak period, the highest was just before 2.00 pm, while in the afternoon peak period, the highest recorded was between 5.00 pm and 6.30 pm.

This means within the given 20minutes a number of public transport vehicles were counted. The research team did know the rationale of the 20minutes and the critical number to be counted within the same time.

Nyalenda recorded Tuk Tuks far above the other three locations, and this was regardless of the day of the week, peak/off-peak period, or even time of day. Migosi then followed. Results also indicate that mini-buses and buses are not yet common public transport modes in



Kisumu city. Affordability (cost) was the most important reason for the preferred public transport. They gave their preferences because of the mode being cheap.

**The waiting time:** The waiting time during different times of the day was also examined. The majority of respondents from Migosi and Milimani reported that the waiting time during morning peak hours was less than 5 minutes although a small number of respondents from Milimani did not respond to the item perhaps as a result of using their private vehicles. Kenya-Re respondents offered a contrast with the majority reporting between 5 minutes and 15 minutes waiting time. All respondents from Nyalenda on the other hand reported less than 5 minutes.

During off- peak hours, respondents from Migosi reported that the waiting time during morning peak hours was less than 5 minutes (40.0%), between 5 minutes and 15 minutes (40.0%) and between 15 minutes and 30 minutes (20.0%). The majority of respondents from Kenya-Re (72.0%) indicated that they waited for less the 5 minutes, with only 24.0% waiting between 5 minutes and 15 minutes. All respondents (100.0%) from Nyalenda on the other hand reported less than 5 minutes of waiting time. Majority of respondents from Milimani who responded to the item indicated that the majority waited for less than 5 minutes. The overall analysis of waiting time showed that a majority of the respondents waited for at most 15 minutes by the road side.

The study team felt that even though currently the parameter does not seem to affect the population of the City, monitoring it may be necessary as it indicates the efficiency of the City's transport system.

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## 4.0 TARGET 11.3

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**Target 11.3** By 2030 achieves more equitable and efficient land use through participatory urban and regional planning and management.

**11.3.1 Indicator;** Ratio of land consumption rate to population growth rate at comparable scale.

**Rationale and Definition:** With the current trend in urbanization, 70% of the world population shall be expected to live in urban areas by 2050 (OECD, 2012). Cities are therefore expected to sustainably absorb increasingly more people from time to time. One way of doing this is to adopt the concept of compact city through urban planning and urban design, which promotes relatively high residential density with mixed land uses and harness the efficiency advantages of agglomeration. Agglomeration provides the compactness, concentration, and connectivity that lead to prosperity and sustainability. Most cities are forfeiting these advantages, becoming more expansive, growing spatially faster than their population, and haphazardly absorbing land needed for agriculture and ecosystem services. It is also arguably a more sustainable urban settlement type than urban sprawl because it is less dependent on the car, requiring less (and cheaper per capita) infrastructure provision (Williams 2000, cited in Dempsey 2010).

This indicator gives the ratio between land consumption of the built-up area and population growth. It can be shown both by a graph showing this relationship over time, as well as a map illustrating the expansion (or shrinking) of the built-up area.

**Data sources availability and analysis:** The mapping resources used for determination of this indicator included; 2005 satellite image of Kisumu City acquired through Un-habitat, landsat images for the City for the years 1994, 2003 and 2011 were acquired through assistance of Bangalore Team. A GIS software was then used to analyze the spatial features on the maps.

Research team geo-referenced and digitized the acquired images to establish land built up areas, open spaces, road network and comparison of different landsat images to determine urban expansion and compactness.

For future annual reporting of the indicator, the City needs to enhance its operations in the GIS lab both with expertise and facilities. Encourage KNBS to provide spatially continuous demographic data in digital form and continue to integrate mapping into their official census data.

Land consumption was determined by digitization of the built up areas (i.e. building and structures) of the 2005 image. Population and growth rate for the selected urban area was determined based on projections provided by the Kenya Bureau of Statistics.

**Indicator determination:** The built up area as determined from the 2005 satellite image was 7.16km<sup>2</sup>. Figure 9: Built up area within urban footprint. The total road network within urban footprint was estimated by GIS procedures to 359km taking an average road width of 12m, the total area covered by the roads is 4.31km<sup>2</sup>. The roads within the City classified different with widths ranging from 60m to 5.5m. On discussion with the City engineer an average of 12 m was agreed upon to include also the road reserves. See Figure 10: Road network within urban foot print. The total built up areas including roads was then estimated as 11.47km<sup>2</sup>.

The landsat images on analysis showed increase inbuilt up areas as shown in Table 6: Classification of landsat images for Kisumu City. Considering the change in built up areas for 2003 and 2011, the land consumption rate is estimated at 5.9% per year which is more than the estimated population growth rate of 2.1%. This can also be seen in figures 11, 12 and 13 where the built up area increases consistently from 1994 to 2011. It can also be seen that Kisumu City is getting congested and the open area is being consumed everywhere.

**Indicator value:** It is calculated as the ratio between land consumption of the built-up area and population growth as 2.81

**Observation:**

This indicator is relevant for Kisumu but does not relate well with the target as it has no participatory component in it. May be the target can be adjusted to consider it.

For annual reporting the Kenya Bureau of Statistics (KBS) and the Kisumu City should collaborate with the KNBS to provide annual demographic statistics in the required form. It is important to equip the City so that it has the ability to report on this indicator on an annual basis. In order to do this it would be necessary to enhance the GIS expertise and acquire related equipments like the GPS.

There is need to collaborate with the regional centre for mapping of resources for development to acquire the satellite images within specific times for analysis and comparison. In addition there is need to collaborate with an institution that has research expertise such as a University in order to get regular satellite images on a regular basis after two years.

### **11.3.2 Cities with more than 100,000 inhabitants that implement urban and regional development plans integrating population projections and resource needs**

Kisumu City has the Kisumu City Development Strategies 2004-2009 which was developed by United Nations habitat has been the basis for guiding City planning in Kisumu. The strategy focuses on all segments of development within the city such as: Development Challenges in Kisumu City, Poor Urban Planning, Inadequate Infrastructure and Services, Transport Infrastructure, Water and Sewerage, Solid Waste Management, Lake Victoria Region City Development Strategies for Improved Urban Environment and Poverty Reduction, Degraded Urban Environment, Increased Urban Poverty, HIV/Aids Pandemic and Other Diseases, Unregulated Urban Agriculture and Livestock Keeping, Urban Governance.

In planning for Kisumu City development the department of planning uses figures and data from the Kenya Bureau of Statistics to show section population growth. The 2009 census report is relied on though projections of population growth are not used to help inform planning for the various city sectors. At the moment the city has not synchronised its relations with the Kenya Bureau of Statistics and as such its planning is minimally informed by KNBS projections.

**Secondary:** Proportion of cities with legislation that promotes participatory mechanisms related to urban planning and local decision making that ensure a fair representation of the urban population, including slum dwellers and informal workers.

Kisumu City relies on the Physical Planning ACT CAP 286 which advocates for public participation in Kisumu City Planning and the Urban Areas and City ACT 13/2011 which also mandates for the same. However implementation of the enabling processes e.g. by entrenching the same in the city by-laws has not been easy. Its implementation process needs to be enhanced e.g. by introducing legislation on Public Private Partnership. The roles of the private persons need to be well defined to avoid duplication.

Observation: specific aspects of promoting the mechanism to be spelt out be used for evaluations as opposed to presence of legislation.

#### **SDSN National Indicator 11.1 Number of street intersections per square km**

The team felt that this indicator may not be relevant for Kisumu. A further explanation on how it will be used to evaluate the target is necessary.

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## 5.0 TARGET 11.4

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**Targets 11.4** strengthen cities efforts to protect and promote cultural and natural heritage.

The importance of cultural and natural heritage sites is enormous to the population as well as for the environmental sustainability. It should be the responsibility of the national government to protect these sites. The research team is keen in the identification and preservation of the sites as well as assessment of the level of government commitment in achieving its mandate in identification, preservation, maintenance and promotion of these sites. Budget allocation and gazettement of the sites are reasonable means of assessment.

### 11.4.1 Percentage of budget provided for maintaining cultural and natural heritage

In this target the city's budget is being scrutinized with a view of determining the percentage of the budget that has been devoted to the cultural and natural heritage. The cultural centers and natural heritage zones that have been pre- identified include the Kisumu Museum, Ofafa Memorial hall, the British Council Library, and the City clock in Oginga Odinga Street, the Sikh Temple and the National Library. The identification criteria relied upon to identify these sites was adopted from the World Heritage and Cultural Diversity definitions of what is a cultural site and what constitutes of a national heritage site. The Municipality doesn't have a set criterion for identifying the same. As such the parameters are not localised in identifying which of the sites are natural and cultural heritage points.

**Indicator determination:** Analysis of budget to establish percentage of budget dedicated to cultural and natural heritage sites (3.8%). This was determined from the county level.

The criterion of arriving at the 3.8% was not available. Most of the sites are not gazetted and as such are not fully protected. They can be acquired by private persons as well as institutions thereby changing their use.

The budget should also include the related **cultural and natural heritage** events.

### 11.4.2 Percentage of urban area and percentage of historical/cultural sites accorded protected status

There is no comprehensive list of the historical/cultural sites existing at the city and this really exposes these sites to change of use especially when there are no by-laws protecting them. The citizens need to be aware of these sites and their benefits. Some of these sites are private. The team felt that they should be public for protection.

**Observation:** The team noted that the indicator was not clearly outlined as to be represented by a single value indicator. They felt that the indicator should reflect the number of sites and its relation to the population rather than proportion of the area of the sites. The aspect of being protected is critical in the case of Kisumu.

Currently there is no documentation but by reporting on this indicator it will prompt the process of documentation and protection. The County government is in a better position to spear head the process and relevant documents kept at the City, County as well as national levels.

**Secondary: Number of public libraries per 100.000 people**

Number of public libraries per 100,000 people. In Kisumu City there is only one public library with a mobile component against a population of 296,977. The value therefore becomes 0.337.

**Observation:** The indicator does not necessarily reflect access to libraries facilities. Modifications and clarifications of the indicator may be necessary.

The need to redefine the library, as access to library services, to reflect reality in present digital world where people can access most library services without necessarily being physically present in the library building structure.

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## 6.0 TARGET 11.5

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**Target 11.5** By 2030, significantly reduce the *social, health, economic and ecological risks and impacts of disasters, environmental change and disease outbreaks by better designing and managing cities*, protecting people in vulnerable situations.

**Indicator 11.5:** Percentage of cities with more than 100,000 inhabitants that are implementing risk reduction and resilience strategies informed by accepted international frameworks (such as forthcoming Hyogo-2 Framework).

**Rationale and definition:** Disasters are increasing in frequency and intensity, and those exacerbated by climate change are significantly impeding progress toward sustainable development. Evidence indicates that exposure of people and assets in all countries has increased faster than vulnerability has decreased, thus generating new risk and a steady rise in disasters losses with significant socio-economic impact, especially at the local and community level. Due to the concentration of population, infrastructure and built environment, and economic activity, the risks for urban areas are particularly high.

The disaster and hazards within Kisumu include; floods, droughts, fire, collapse of buildings and disease outbreaks.

**Observation:** The indicator may not be accurate. When can it be said that the city is implementing risk reduction and resilience strategies? These documents may exist within the offices but with minimum reference. It should have more precise aspects that can indicate implementation process and the relevant strategies. However, it was realised that the city is slowly implementing ISUD document.

An analysis of the existing policy documents of the city has revealed that there is no focus on risk reduction and resilience strategies that are informed by the international or local frameworks. However, to some extent the Hyogo-2 Framework has been used to evaluate the operations of the City with no indications of informing the implementation process.

### 11.5.1 Number of people killed, injured, displaced, evacuated, relocated or otherwise affected by disasters

The information required to report on this is sensitive and reporting on them may require approval from some government institutions as they may positively or negatively reflect on the responsibility of the responsible institutions and even on the image of the country. There is database existing at the City currently to reflect on actual numbers affected.

To report on this indicator, the department in the City concerned needs to be strengthened through facilitation to function within and also collaborate with other relevant institutions e.g. local hospitals, police service.

As it is in the City of Kisumu there is no single office that is charged with the task of spearheading natural disasters and calamities in the city. As such there is no documentation on number of people who have been killed, injured, displaced, evacuated, relocated or otherwise affected by disasters. The city of Kisumu is thus urged to create a central coordinating office to coordinate issues of natural disasters. This specific target is important

and if implemented it could help inform city planning with a view of arresting future disasters in the city.

### **11.5.2 Number of housing units damaged and destroyed**

There is no existing documentation that can be used to report on the indicator. As noted above, it may be due to the fact that no single office within the City of Kisumu is charged with the responsibility. However even with the office, focus on number of people displaced or rendered homeless may be more relevant.

#### **Secondary: Economic losses related to GDP caused by disasters**

This may be difficult to measure accurately as it may depend on what is declared. However it may be based on the estimated cost of damaged property and facilities.

#### **Secondary: Proportion of population living in high-risk zones**

Criteria to identify the high risk areas to be outlined and agreed upon. High risk areas may be opportunities in some cases. Focus needs to be on how to manage or cope with the situations, e.g. training residents on how to positively manage floods when it occurs.



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## 6.0 TARGETS 11.6

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**Targets 11.6:** By 2030 reduce the adverse environmental impacts of cities paying special attention to biodiversity loss, air quality, construction materials and waste management.

**Indicator 11.6:** Percentage of urban solid waste regularly collected and well managed.

**Rationale and definition:** Urban households and businesses produce substantial amounts of solid waste (not including industrial, construction, and hazardous waste) that must be **collected regularly** and **disposed of properly** in order to maintain healthy and sanitary living conditions. Such collection can be through formal or informal means. Uncollected and improperly managed solid waste can end up in drains and dumps, and may result in blocked drains and other unsanitary conditions. Mosquitoes that spread disease can breed in blocked drains and dumps. In addition, some constituents of solid waste, such as organic matter, can attract flies and rodents that spread gastrointestinal and parasitic diseases.

**Sustainable solid waste management** is essential. This implies waste reduction, reuse, recycling and composting, incineration, and disposal in landfills. Waste reduction, recycling, reuse and composting are preferred methods and should be promoted, as they reduce demand on scarce environmental resources, decrease energy use, and minimize the quantity of waste that must eventually be incinerated or disposed in landfills.

UN-Habitat (2009) has specified that solid waste collection can include (formal or informal) collection from individual households and regular dumpster collection, but not local dumps to which households must carry garbage. Solid waste collection should be considered regular and adequate if it occurs at least once a week.

**Data availability and analysis:** A lot of work on this has been done in Kisumu. Literature available at the City based on previous studies gives a range of 20%-30% collection and taking the waste to the dump site. There is also information in other waste management aspects within the City, the County or the Kisumu Urban Planning. However the team still felt the need of carrying out a field survey to evaluate some aspects of waste Management.

A field survey was therefore conducted to test other aspects which the team felt could be important and add value. It evaluated; mode of collection, frequency of collection and disposal means as well as sustainable solid waste management which includes; waste reduction, reuse, recycling and composting, incineration, and disposal in landfills

**Observation:** Waste collection in Kisumu is done by the City Council, registered companies with permits and private individuals (SMEs) which in total collect **35%** of waste generated within Kisumu City. The distribution is as follow; Companies and Private SMEs collect 15% while internal collections by the City Council is 20%. 65% of waste generated is not collected. This is based on dump site records which were analyzed.

The total solid waste generated within Kisumu City is estimated at 350 tons per days according to Baseline survey of 2008. Out of the 350 tones 62.5% is organic in nature.

However the ongoing Kisumu Waste management Strategy review reports the city's waste generation at 385 tonnes per day and an average of 0.4 kg/per person/day. Total domestic waste accounts for 210 tons per day, and residential areas produce 1470 tons of waste per week. Every week, industries dump at Kachok 45 tons, markets dump 145 tons of waste daily, hospital and clinical waste dump 12 tons per day, while other sectors account for 11.25 tones. The composition of waste generated is 63 % organic, 12.2% waste paper, plastic 10.2% glass 3.2 % scrap metal 1.3% other 9.5%. 63% organic waste is not recovered.

Waste is collected daily from commercial areas e.g. Hotels, markets (e.g. Jubilee, Bus park, Kibuye), hot spots e.g. Nyalenda, Kondele, Nyalenda ring road where waste is dumped illegally along the street, CBD by emptying the litter bins, Kamas area, Kiwasco office area, Octopus area, Kaloleni estate (where private waste collectors not active). Weekly Collections in Manyatta at Peace market and Migosi estate. Milimani area is mainly served by Companies with the city doing only three spots, Obunga along the by-pass road and Kikomi along Pamba Road at one hot spot but not getting into the Estates. The City also collects waste weekly along by-pass connecting Arina and Manyatta (Private waste collectors may be dumping along by-pass to avoid payment fee at the Kachok dump site).

Within the City waste reduction at source is not effective and has minimum impacts. This may be due to lack of enforcement and awareness. Similarly, Re- use and Re- cycling are not effective but mainly focused on plastics bottles. Composting is currently being done at Kibuye Market but not to a large scale.

The mode of waste collection in an area or estate is reflective of awareness and level of adoption of best waste management practices especially from the household level. Perhaps the indicator needs to be modified for cities like Kisumu.

Perhaps existence of legislation that supports private waste collection by the local government could also be used for evaluation.

Need to bring out specific aspects of "waste being regularly collected and well managed". Mostly in Kisumu it is simply collection to the dumpsite with minimum value addition in terms of recycling etc.

#### **11.6.1 Percentage of urban solid waste regularly collected and recycled (disaggregated by E-waste and non-E-waste)**

The City does not have any data on e-waste as such there is need to focus on information on the quantity of e waste that is collected from the City. This could be done through a commissioned survey on an annual basis. The level of fine particulate PM 10 and PM 2.5 are not measured by Kisumu City. This is due to lack of the relevant equipment that could measure fine particulate matter. For the City to be able to measure the same there is need for the City to acquire relevant expertise and equipment to measure the same.

## **Disposal of waste, sorting, recycle and reuse**

Disposal of waste is an important activity in any town. When asked to state waste disposal mechanism used in the estates, 64.0% of Migosi respondents recorded that private waste collection was the most common followed by burning (32.0%). (See Table 7: Classification of landsat images for Kisumu City). As for Kenya-Re, again the most prevalent waste disposal mechanism was private waste collection (92.0%) followed by a bit of municipal collection (8.0%). In Nyalenda, dumping of waste was the key approach to waste disposal (50.0%) closely followed by burning (39.3%). Milimani was unique in that 80.0% reported that they used private waste collection mechanism with a meagre 12.0% reporting that they used municipal waste collection.

The frequency of solid waste collection is also very important in a city like Kisumu. When asked to record the frequency of solid waste collection, respondents in the four locations under study reported the figures in Table 8. Collection of solid waste was mainly once a week in Migosi, All respondents from Kenya-Re reported that solid waste collection was done once a week. Only 2 (7.1%) respondents from Nyalenda reported that solid waste was collected once a week, a clear indication that there is very little collection of solid waste going on in Nyalenda. Milimani seems to be doing well with 19 (76.0%) reporting collection of solid waste once a week and 5 (20.0%) at least twice a week.

### **11.6.2 Level of ambient particulate matter (PM 10 and PM 2.5)**

The data is not available for the city and the City is not keen in reporting on the indicator. Reporting on the indicator now shall involve a consultant to first carry out a survey. The overall cost might be high. However, the National Environmental Management Authority (NEMA) has the ability to put it as a requirement for the various institutions and industries to carry out the measurements in an annual basis.

The City needs to make a decision on the importance of this indicator. Is it necessary for Kisumu or it should be left to the factories and industries as a requirement?

### **Secondary: Proportion of recycled from municipal waste**

Recycling is the process by which materials otherwise destined for disposal are separated at source, collected, processed, and remanufactured or reused. This is increasingly being adopted by urban communities as a method of managing municipal waste and source of income for the urban poor. Composting is a reclamation process that involves activating and controlling the biological fermentation of organic waste, in order to obtain a product, which can be used as an agricultural soil conditioner.

**Purpose:** Can divert a significant percentage of municipal, institutional, and business waste from disposal and can help to control waste management costs by generating revenue through the sale of recyclable materials.

According to the ISUD report 38% of the waste generated is recyclable while 62% of the waste produced is bio gradable. The same report approximates that every household produces up to 9 kilograms of waste every week.

## Public private partnerships and stakeholder participation

Public Private Partnership is an arrangement between a Government institution e.g. County or The City and a private party under which a private party undertakes to perform a public function or provide a service on behalf of the contracting authority. In waste management within the City the team the need to engage private organizations or waste pickers more strongly to compliment the City's efforts especially in residential areas.

### Secondary: GHG emissions tons/capita

Data on this is not available and the City not keen on it. NEMA can put the measurements as a requirement for the various institutions and industries.

### Secondary Indicators: Percentage of wastewater treated within an urban agglomeration

The city areas covered by sewerage system include the CBD, main business areas and planned estates including Kenya-Re. Few houses are also connected within the areas of Migosi and Manyatta. It would be easier to talk of the area covered by the system as establishing the quantity of waste water into the treatment plants would not be accurate.

The sewerage network covers the more densely populated areas of Kisumu, city centre and the industrial area. Parts of Manyatta and Kanyakwar are also connected to the sewer system. The rest of the city uses pit latrines or conservancy/septic tanks.

**Observation:** The indicator to focus on the City's water consumption (demand), sewerage connectivity, capacity of waste water treatment plants for the city and the quality of the effluent from the plants. Sewerage connectivity has been a challenge in Kisumu given the unplanned constructions along the sewerage lines.

The City's commitment to ensure all waste water is connected to the treatment plant should also be tested.

### Budget allocation for City's environment department

The information is available within the City offices as well as the county offices and can be shared free of charge. It is a reflection of the City or county to commitment on environmental issues.

#### Budgeting

1. Total City Budget 2015/16 is	=	<b>943,230,000/=</b>
2. Environment		
i. O & M	=	14,016,364/=
ii. Project Development	=	26,000,000/=
iii. Personnel	=	66,519,965/=
Total for environment		<b>106,536,329/=</b>

Proportion of Environmental budget to total City Budget is =**11.3%**

1. Total City Budget 2014/15

i.	O & M	=	711, 072,040/=
ii.	Personnel	=	94,949,470/=
iii.	Projects	=	0/= Was handled at the County level
	Total	=	<b>816,021,510/=</b>

2. Environment

i.	O& M -	=	8, 970,962/=
ii.	Personnel-	=	60,486,894/=
iii.	Projects (Nil)	=	0/=
	Total –	=	<b>69,457,856/=</b>

Proportion of Environment to total City Budget is =**8.5%**

**Observation:** The indicator to include distinct components of the budget; recurrent and development and handle them separately.

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## 7.0 TARGET 11.7

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**Target 11.7** by 2030 provide maintain and encourage access to safe inclusive and multipurpose public space.

**Indicator 11.7** Area of public space as a proportion of total city space.

**Rationale and Definition:** Having sufficient public space allows cities and regions to function efficiently and equitably. Reduced amounts of public space impacts negatively on quality of life, social inclusion, infrastructure development, environmental sustainability, and productivity. For example, well-designed and maintained streets and public spaces result in *lower crime and violence*. Making space for formal and informal economic activities, recovering and maintaining public spaces for a diversity of users in a positive way, and making services and opportunities available to marginalized residents enhance social cohesion and economic security.

### Primary Data Source

Satellite imagery; Land sat data spatial analysis within the City lab to establish the secondary indicators 1, 2 and 3.

**Secondary Indicators:** (1) Proportion of total public space in a city that is assigned to support livelihoods of the poor; (2) Urban green space per capita; (3) Proportion of urban areas located fewer than 300 meters away from an open public space; (4) Number of reported crimes (homicides, injuries and theft rates) committed annually in urban areas, per 100,000 population.

A map is provided that shows green area, parks, trust land, market areas, recreational areas and bus stops.

The public spaces include Impalla Wildlife Sanctuary, Moi Sports stadium, Jomo Kenyatta Sports ground, Oile park, Uhuru park, Jamhuri park, Taifa park, Dunga public park and Kisumu Museum. See Table 9: Public green space

**Indicator determination:** As shown in Table 9: Public green space, the Proportion of total public space in a city is 7.04%

**Observation:** The public spaces need to be gazetted. The indicator should include the identification and gazetement of the public spaces. This will help in preserving the uses of these places hence protecting them from being encroached/grabbed for other non-public uses. The rationale for 300m was not clear to the team.

**Secondary:** (2) Urban green space per capita

**Observation:** The total area of the sites identified and digitized was small. See Table 9. The value of the indicator shall be very small.

**Secondary:** (4) Number of reported crimes (homicides, injures and theft rates) committed annually in urban areas, per 100,000 population.

Police report on crime rate to be refined further to establish secondary indicator 4

- Firearms recovered – 2014/15 = 64
- Number of crimes reported – July 2014- April 2015 = 874
- Murder cases – 2014 to 2015 = 2
- Assaults - 2014 to 2015 = 130
- Dangerous drugs - 2014 to 2015 = 95
- Robberies – 2014 to 2015 = 30
- Theft/ Burglaries/ House breaking – 2014 to 2015 = 277
- Economic & corruption 2014 to 2015 = Nil
- Morality & indecent Assault / Rapes, Defilement 2014 – 2015 = Nil
- Forgeries & Obtaining 2014 to 2015 = Nil
- Stock theft 2014 to 2015 = Nil

The standard format required for the indicator to be established and shared with the police department for uniform reporting. The information is available at the police offices and can be shared on request. Prior arrangements by the City will enable the information be got in the format required for reporting purposes.

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## 8.0 TARGET 11

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### 8.1 Target 11.a

**Target 11.a** Prepare and implement a national urban and human settlements policy framework.

**Indicator 11.a** Presence of a national urban and human settlements policy framework.

A number of projects (e.g. Kenya Slum Upgrading Programme (KSUP), KIWSAMP, Kisumu Urban Planning (KUP)) led by Un-Habitat, SIDA, French Government and other international organizations have been undertaken within Kisumu with specific objectives of improving the living standards. These documentations are available in the various concerned offices.

**Observation:** The indicator should focus not just on the presence but on the sustainable implementation processes, up-scaling of good practices and improvements.

The City should have mechanism to sustain the momentum in the projects even without initial external support.

The indicator should also focus on evaluating the involvement of stakeholders and the beneficiaries in planning, implementation and maintenance e.g. Public Private Partnership (PPP) arrangements.

### 8.2 Target 11.b

**Target 11.b** by 2020 increase by x percentage the number of cities and human settlement adopting and implementing interpreted policies and plans towards inclusion resource efficiency mitigation and adaptation to climate change, resilience to disasters develop and implement in line with the forthcoming Hyogo framework holistic disaster.

The local risk reduction policy framework is not there. As such there is no regular assessment and usage of the frameworks to check and assess risk and disaster prone situations. The city has only once used the Hyogo framework to analyze and to assess the city's situation.

### 8.3 Target 11.c

**Target 11.c:** *Support national, regional and local governments through financial and technical assistance to strengthen revenue streams, regulatory and institutional capacity.*

**Indicator 11.c:** Sub-national government revenues and expenditures as a percentage of general government revenues and expenditures

**Rationale and definition:** This indicator measures (i) the percentage of revenues that are either raised by, or allocated to, sub-national governments (regional and local governments)



as a proportion of general government revenue; and (ii) the percentage of total public expenditure undertaken by sub-national levels of government as a proportion of general government spending (excluding social security funds and public corporations).

Sub- National government revenues and expenditure as a percentage of general government revenues and expenditure

**Revenue collection and budget allocation**

2014/15 The City budget allocation from the County	=	94,949,470/=	
2015/16 The City budget allocation from the county (includes 90M for projects)	=	232,000,000/=	(includes 90M for projects)
2013/14 Revenue collected at the City	=	510,160,933/=	
2014/15 The City revenue budget	=	792,044,600/=	
2014/15 Revenue collected to date April 2015	=	446,777,177/=	
2013/14 County allocation from the National Government	=	4,866,687,745	
2013/14 Total allocation for all 47 counties	=	190,000,000,000	
2014/15 Total allocation for all 47 counties	=	226,000,000,000	

The City collects revenue and takes it to the county and only seeks authority to spend it. The City’s revenue collection has been always more than its expenditure or budget allocation. However the city’s revenue collection is about 85% of the county’s revenue collection. This is because of its urban status with many commercial and industrial activities as well as attractive services compared to other five sub counties also expected to collect revenues.

The county budget allocation from the national government in 2013/14 = 2.56%  
 $(4,866,687,745/190,000,000,000)$

Considering that there are 47 counties in Kenya, equity in budget allocation, all other parameters constant, will give 2.13% for each county which is not far from 2.56%.

Observation: The research team felt that the indicator should focus on two distinct aspects of allocation; recurrent expenditure and development at National, County and City levels. This is to some extent an indicator of performance level of an institution and can be a reminder to the City’s development agenda. The ratio of recurrent and development should also be determined at all levels.

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## 9.0 CONCLUSION

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In conclusion it is important to note that all the targets and indicators should be regularly monitored and measured so as to ease the process of reporting on the same. Key areas where this could be focused on is acquisition of relevant equipment such as GIS and fine particulate measurement machines which will be able to ease the process of measurement and reporting. The city administration too needs to adjust and refocus its attention on critical areas of reporting by consolidating roles such as that of disaster management and GIS systems. Relevant personnel with appropriate training should be employed at the Council to enable the council to effectively monitor and report on some of the critical targets and indicators set in this study. In order to succeed further on this evaluation exercise of the city there is need to ensure that the city has relevant certified linkages with the Kenya National Bureau of Statistics (KNBS). This would help in demographic data projections and planning of city public utilities for the Kisumu populace.

With regard to data availability at the city, there are no records or data collection and storage mechanism especially in areas relevant the indicators. The team relied mainly on data acquired from other institutions e.g. KNBS and The Police Service.

Finally for success in measuring this indicators there is need to ensure that expertise of those with research experience from institutions of higher learning be included in order to spearhead the research exercises in collaboration with the City and other relevant National Institutions.

Reporting on these indicators annually will refocus attention of the City on targets and indicators, making them more proactive in restructuring to report on the indicators while improving on service delivery in all areas.

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## 10.0 RECOMMENDATIONS

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**In order to ease the process of measurement of these indicators of this study it would be necessary to make the following recommendations to the City Council of Kisumu**

1. That the council needs to consolidate certain roles such as that of disaster management and the accompanying data that goes with it.
2. That they should as well acquire GIS software and the related facilities to operationalize the GIS lab.
3. That staff with required GIS expertise be employed in order to help with GIS spatial analysis.
4. That relevant expertise be trained or employed to handle issues of fine particulate matter as gas emissions are apparent in urban settlements such as Kisumu. The City to evaluate importance and relevance of reporting on GHG emissions and Fine particulate matter (PM 2.5 Concentration) and seek required expertise and facilities.
5. That there should be close collaboration of three institutions in the measurement of these indicators namely JOOUST, Maseno, KLIP KNBS and the City Council of Kisumu.
6. The measurement of the indicators should be done on an annual basis.
7. The data collection, processing and analysis should be a collaborative effort between The City of Kisumu, KNBS, Government institutions responsible for urban issues, and the Research Institutions and Universities.
8. Continuous consultation with small group of selected experts to advise on data collection and interpretation and provide their most informed judgment on the values and relevance of the indicators from time to time.
9. Make efforts to correct deliberate distortion of information to satisfy other different interest.

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## ANNEX I: FIGURES

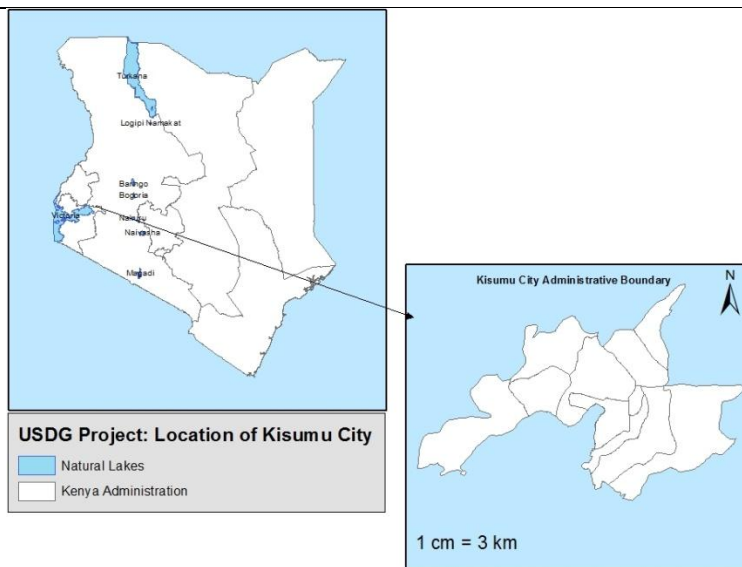


Figure 1: Location of Kisumu City and the administrative boundary

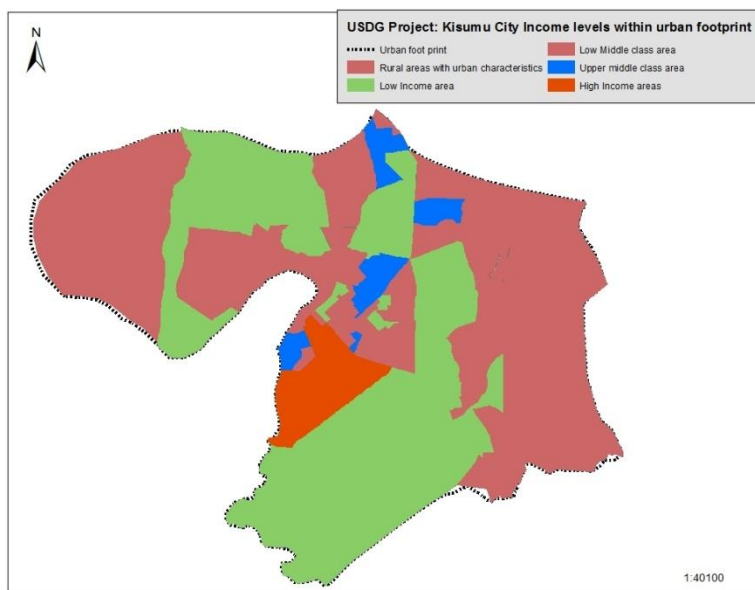


Figure 2: Urban foot print

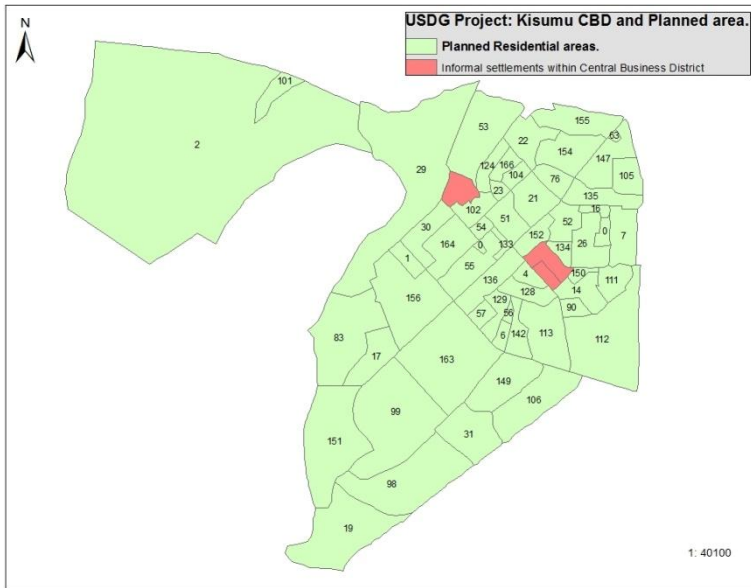


Figure 3: The CBD with main business areas and planned residential estates

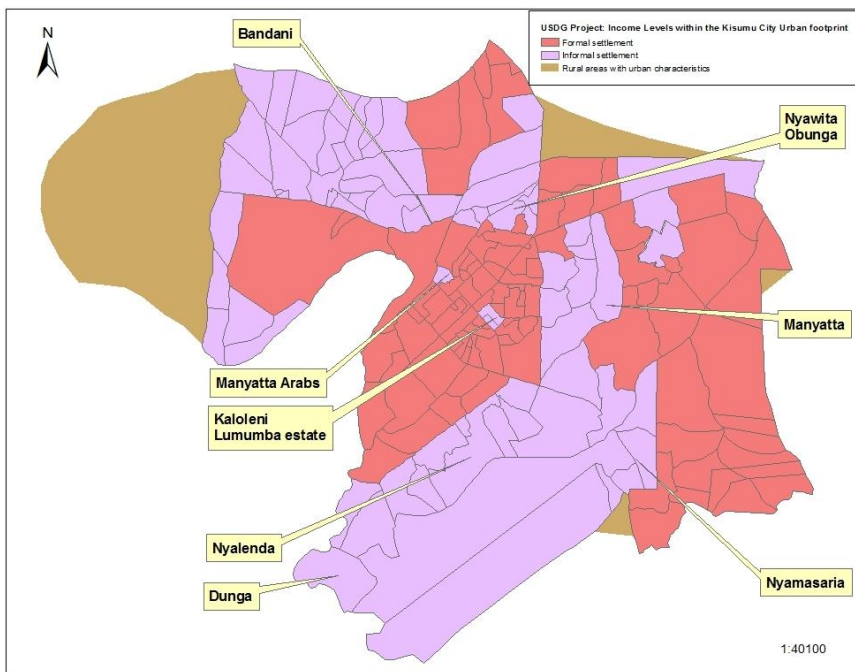
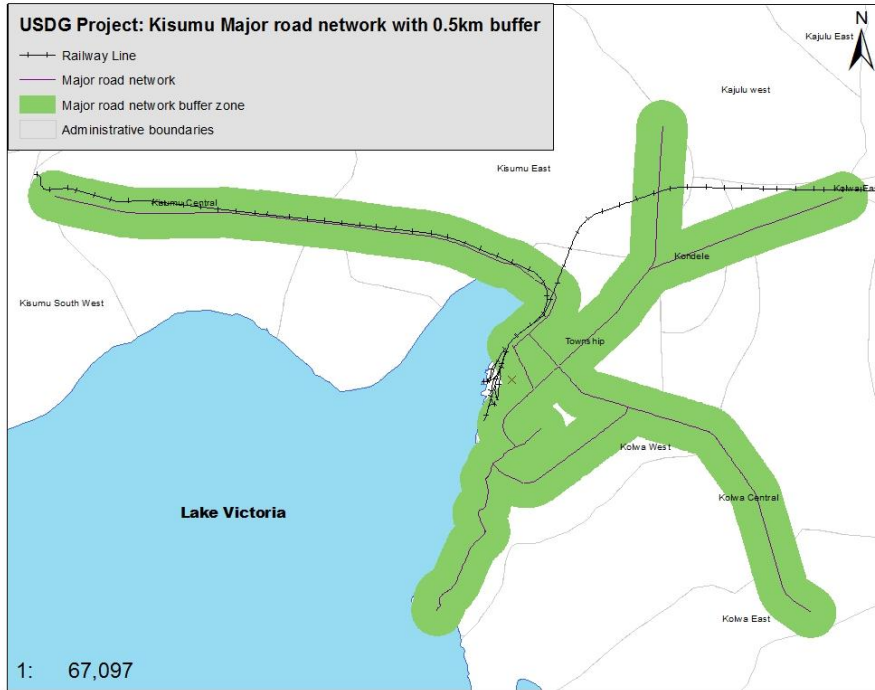


Figure 4: Formal and informal settlements



**Figure 5: Buffered public transport routes (To be edited next to Kodiaga prisons)**

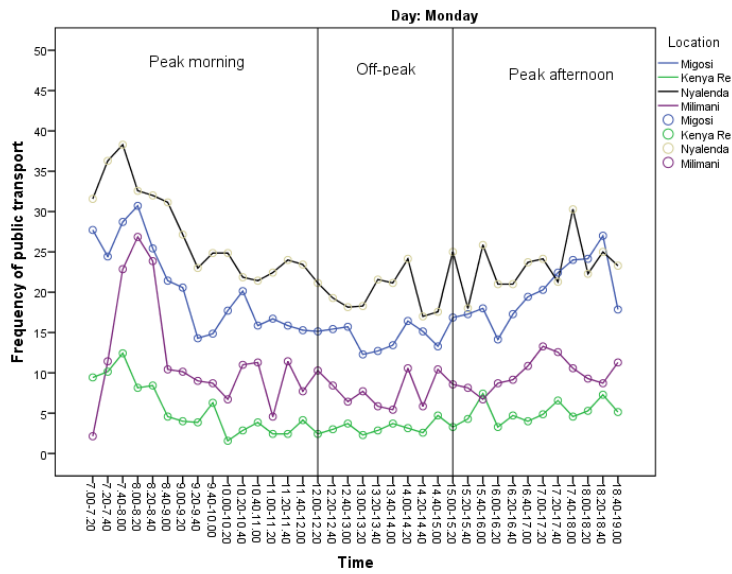


Figure 6: Number of public transport for all types of public transit

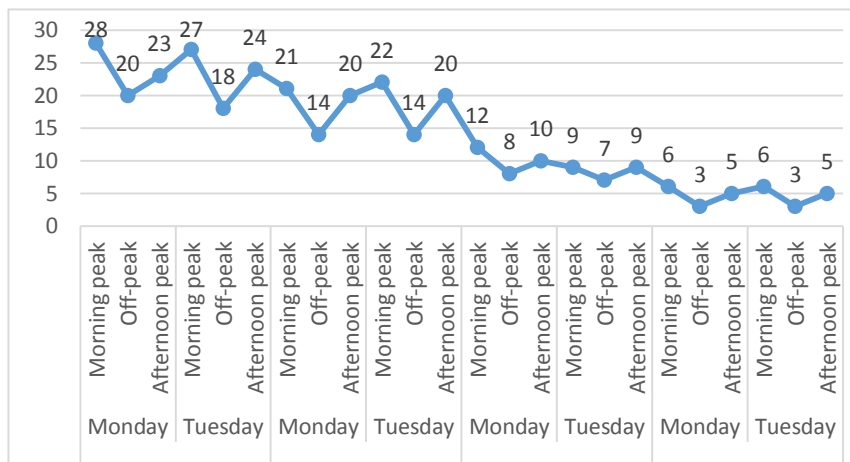


Figure 7: Average number of public transit across location, day and period of day



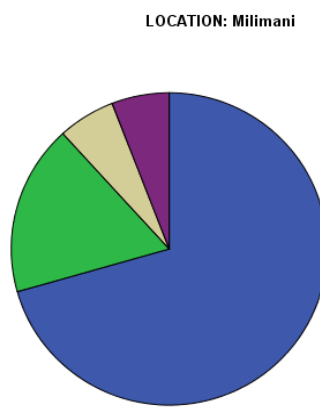
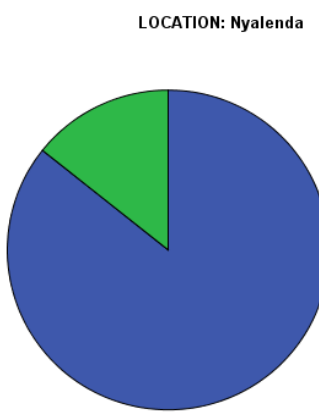
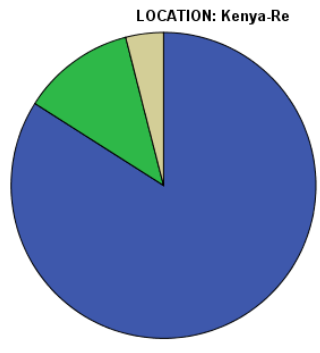
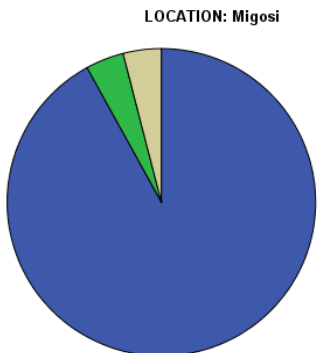
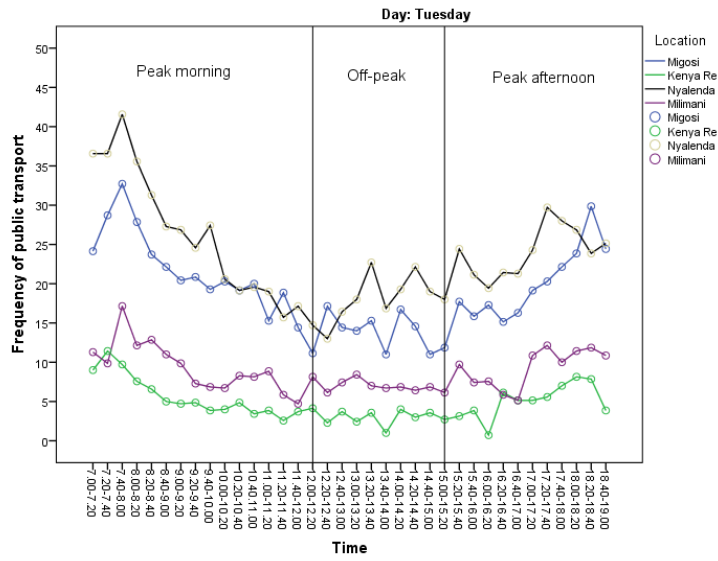
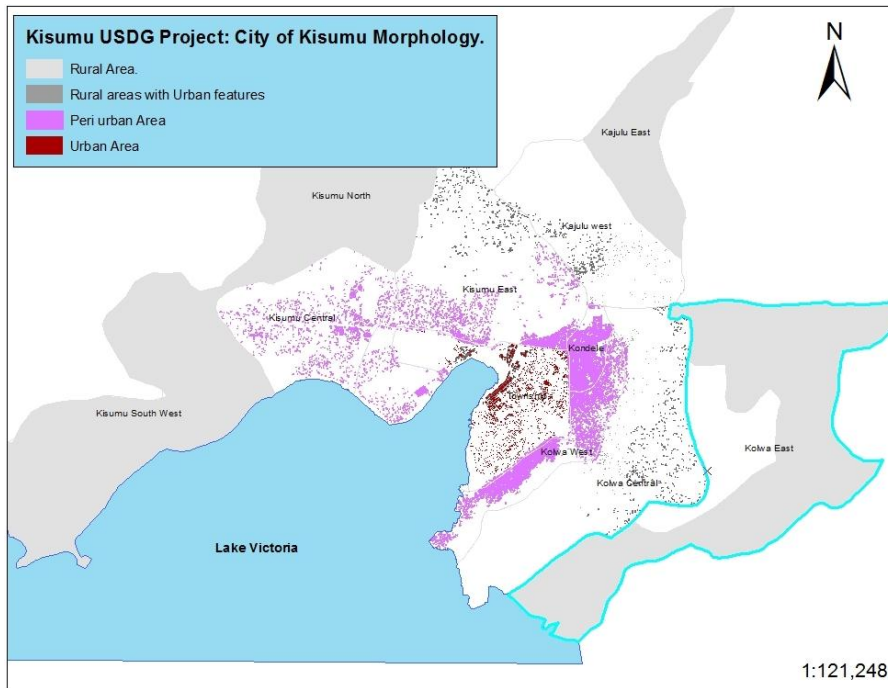


Figure 8: Percent of income spent on transport



**Figure 9: Built up area within urban footprint**

<u>Category</u> <u>(KM<sup>2</sup>sq)</u>	<u>Built up Area (KM<sup>2</sup>sq)</u>	<u>Total Area</u>
1. Rural area	-	142.12
2. Rural with urban x-tics	0.46	67.65
3. Peri urban	2.68	57.33
4. Urban	2.01	16.99
- CBD	0.24	-
- Industrial	0.39	-
- Others spaces	1.38	-

The estimated length of the road system is 287km within city agglomeration area.

N/B: \* Population Figures extracted from the KNBS Population Census Report 2009

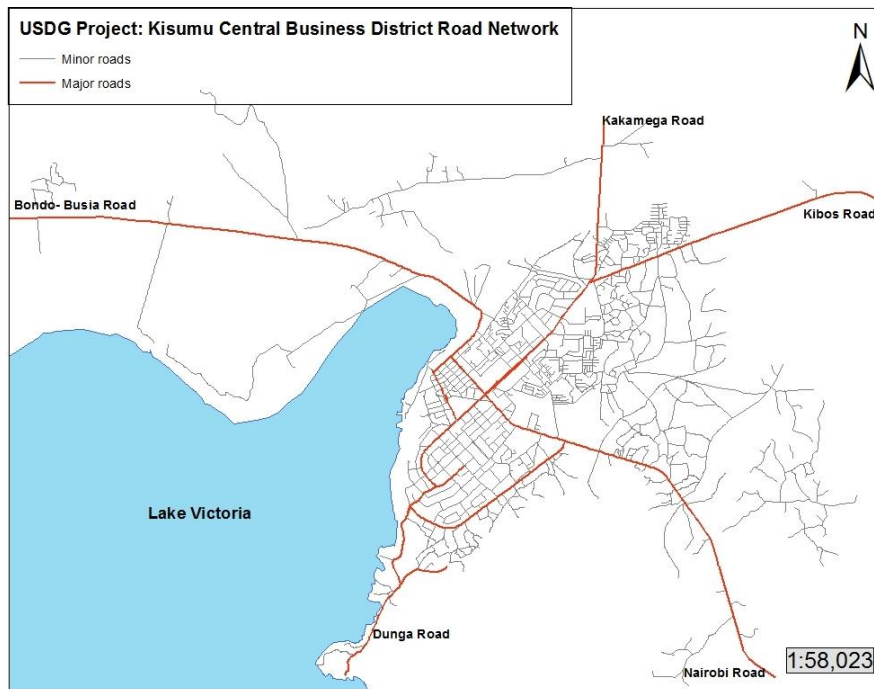


Figure 10: Road network within urban foot print

The total road network within urban footprint is estimated by GIS procedures to 359km. taking an average road with of 12m, the total area covered by the roads is 4.31km<sup>2</sup>. The roads within the City classified different with widths ranging from 60m to 5.5m. On discussion with the City engineer an average of 12 m was agreed upon to include also the road reserves.

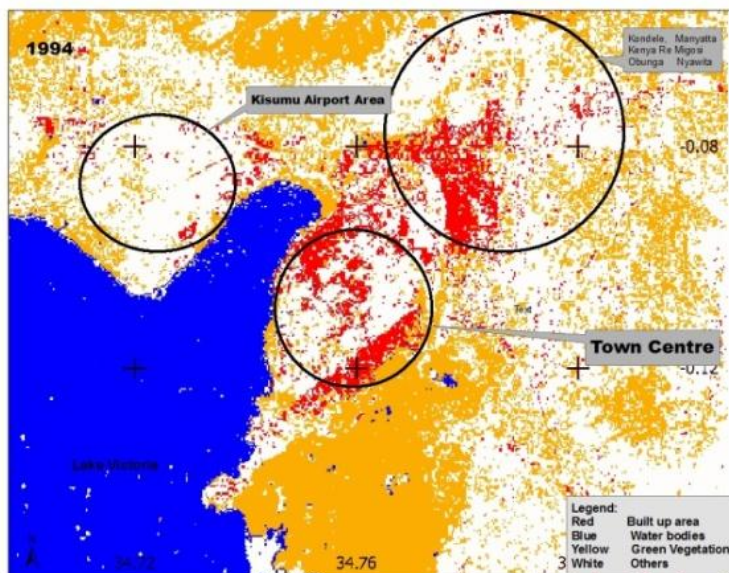


Figure 11: 2003 Satellite image

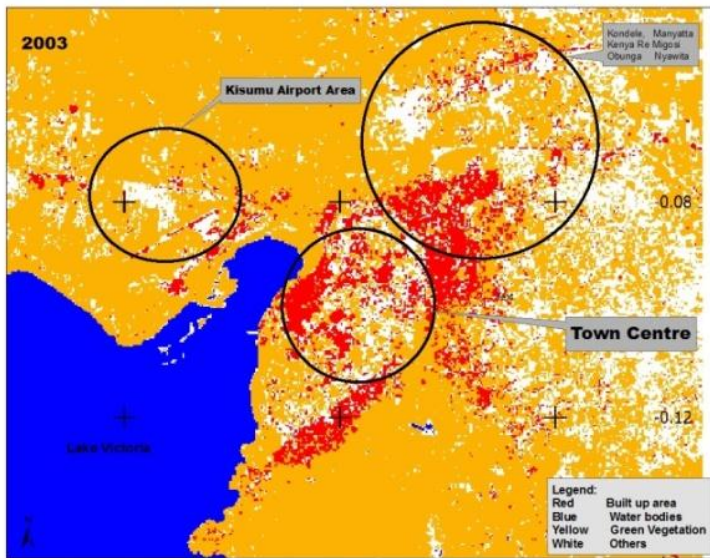


Figure 12: 2003 Satellite image

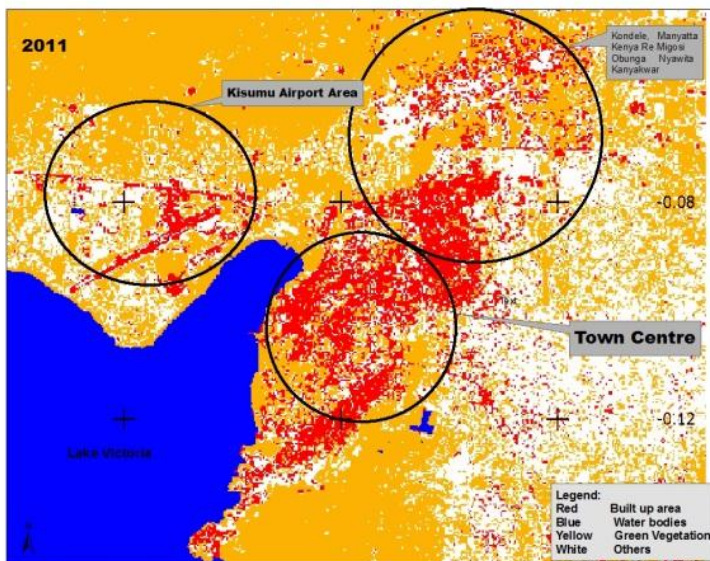


Figure 13: 2011 Satellite image

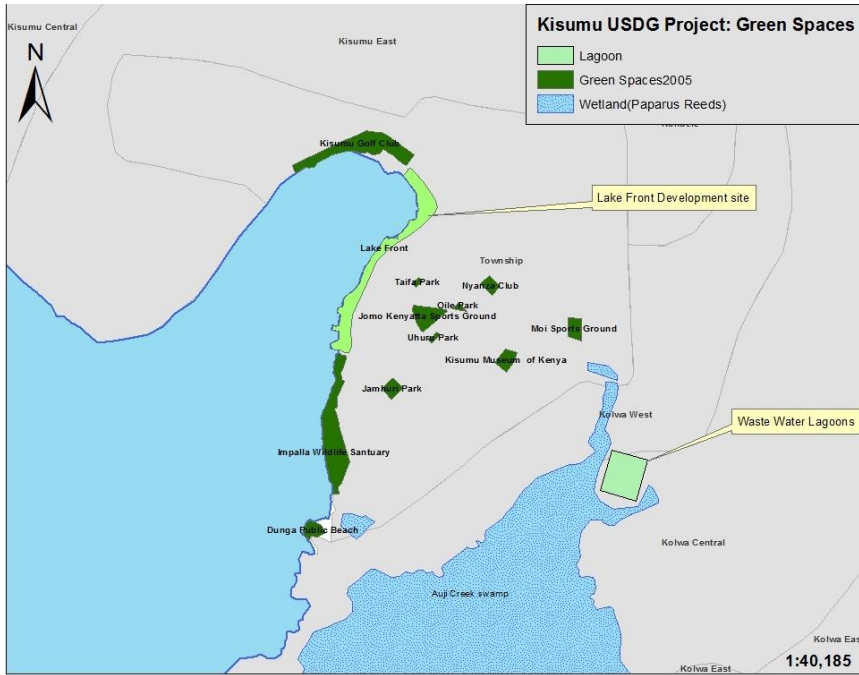


Figure 14: Green space

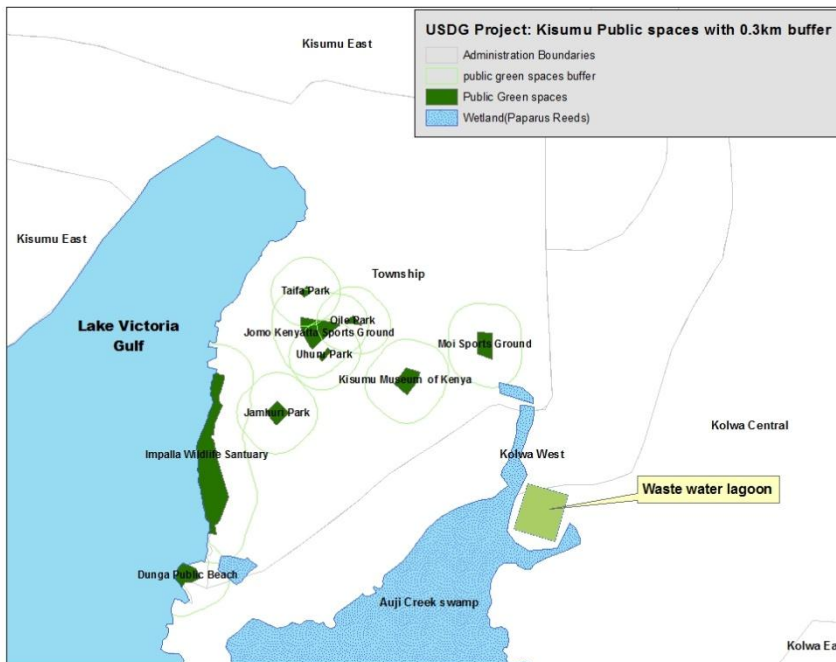
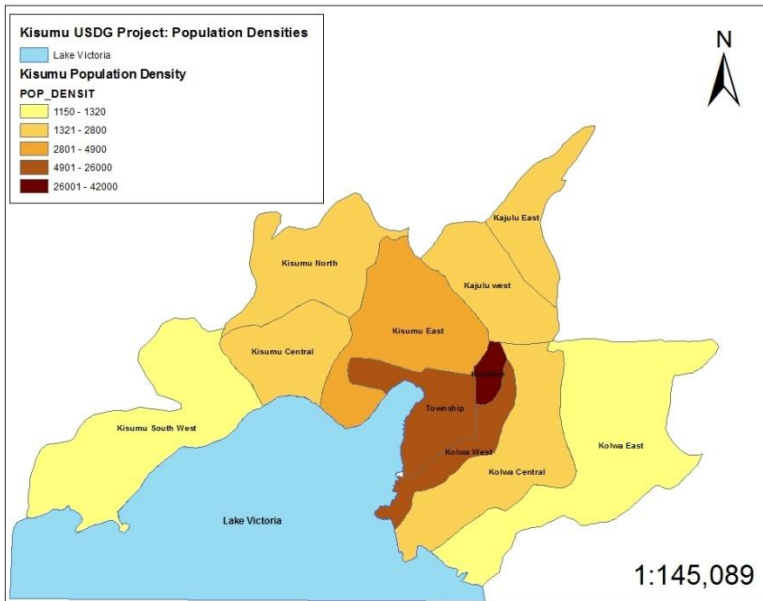
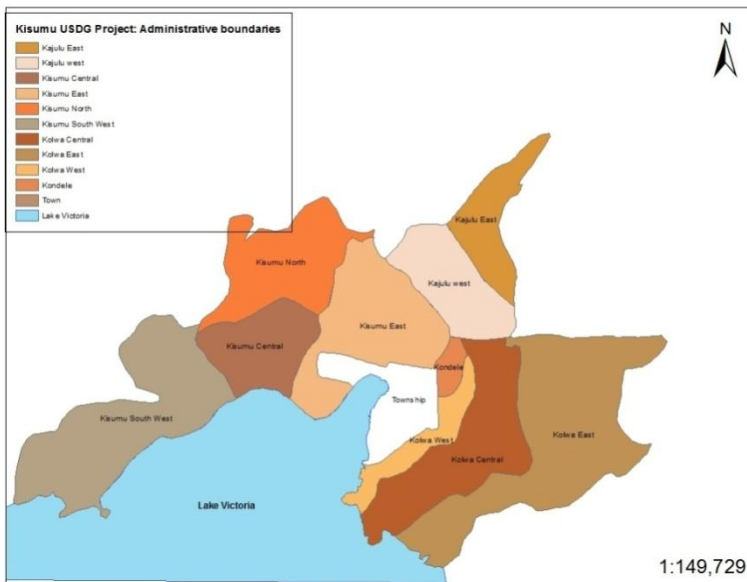


Figure 15: Kisumu public spaces with 0.3km buffer

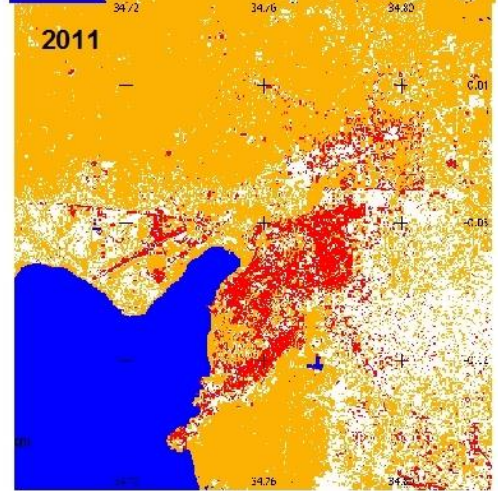
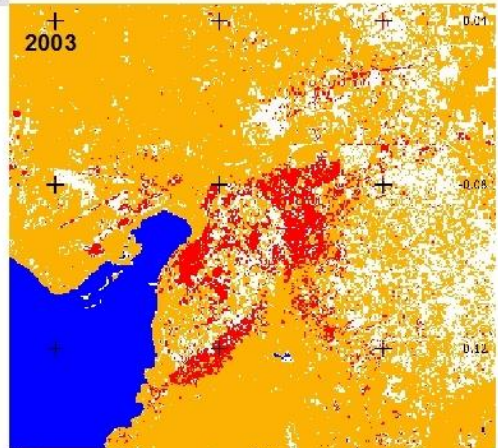
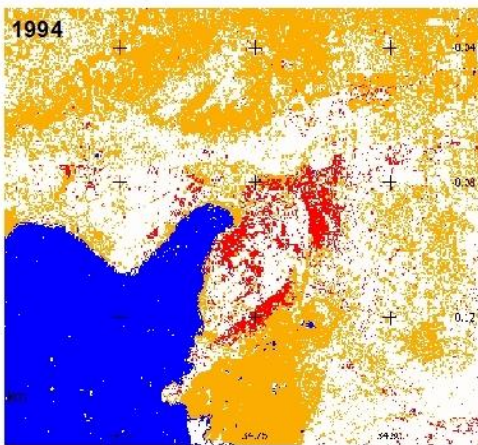


**Figure 19: Population density as per sub locations**



**Figure 20: Kisumu City Boundary and locations population density**

**USDG Project: Kisumu City trend of build up**



Year	Area Built up (KMSQ)	Vegetation	Waterbodies	Others
1994	10.02	150.80	73.79	117.6
2003	12.15	222.09	73.43	44.54
2011	19.19	194.99	73.24	64.79

Key:  
 Red Build up  
 Blue Water bodies  
 Yellow Vegetation  
 White Others

Comparison of built up areas

## ANNEX II: TABLES

**Table 1: Kisumu City 2009 population census**

Area	District_B	Division_B	Location_B	Sub-Location	Males	Females	Total	Hsehold	Pop_KM2
2.1	Kisumu East	Winam	Township	Kaloleni	6933	7873	14806	3658	7036
1.3	Kisumu East	Winam	Township	Northern	4804	4935	9739	2107	7439
5.2	Kisumu East	Winam	Township	Southern	4729	4434	9163	2476	1760
7.2	Kisumu East	Winam	Township	Bandari	3878	3745	7623	1921	1055
2.4	Kisumu East	Winam	Kondele	Manyatta A	23503	24501	48004	12525	20334
1.3	Kisumu East	Winam	Kondele	Nyawita	7526	7221	14747	4099	11281
1.9	Kisumu East	Winam	Kondele	Migosi	9182	10644	19826	4795	10291
17.5	Kisumu East	Winam	Kolwa Central	Kasule	9550	9702	19252	4880	1101
16.6	Kisumu East	Winam	Kolwa Central	Nyalunya	6082	6405	12487	2731	751
4.7	Kisumu East	Winam	kolwa west	Nyalenda B	16189	16241	32430	8561	6886
3.2	Kisumu East	Winam	kolwa west	Nyalenda A	14829	13440	28269	8070	8953
2.5	Kisumu East	Winam	kolwa west	Manyatta B	14219	13733	27952	7808	10998
23.7	Kisumu East	Winam	Kolwa east	Buoye	2746	3043	5789	1230	244
11.9	Kisumu East	Winam	Kolwa east	Mayenya	2720	2903	5623	1205	472
22.1	Kisumu East	Winam	Kolwa east	Chiga	4841	5035	9876	2168	439
16.7	Kisumu East	Winam	Kisumu South West	Ojola	4001	4322	8323	1823	499
16.3	Kisumu East	Winam	Kisumu South West	Osiri	3428	3846	7274	1681	446
17.4	Kisumu East	Winam	Kisumu South West	Kanyawegi	3237	3292	6529	1454	374
10.5	Kisumu East	Winam	Kisumu Central	Korando A	7366	4691	12057	2406	1152
8.1	Kisumu East	Winam	Kisumu Central	Korando B	3116	3330	6446	1367	800
11.8	Kisumu East	Winam	Kisumu east	Kogony	10041	9584	19625	5164	1667
9.8	Kisumu East	Winam	Kisumu east	Dago	2803	2921	5724	1275	587
1.3	Kisumu East	Winam	Kisumu east	Mkendwa	515	517	1032	219	776
6.6	Kisumu East	Winam	Kisumu east	Kanyakwar	6447	6107	12554	3553	1913
6.4	Kisumu East	Winam	Kisumu North	Bar A	2094	2225	4319	957	679
6.7	Kisumu East	Winam	Kisumu North	Bar B	1944	2121	4065	898	607
16.4	Kisumu East	Winam	Kisumu North	Nyahera	4796	4954	9750	2041	595
7.3	Kisumu East	Winam	Kajulu East	Kadero	3270	3520	6790	1505	934



4.7	Kisumu East	Winam	Kajulu East	Got Nyabondo	1934	2116	4050	853	872
3.6	Kisumu East	Winam	Kajulu East	Okok	1881	2057	3938	887	1081
13.7	Kisumu East	Winam	Kajulu West	Konya	6933	7342	14275	3357	1042
9	Kisumu East	Winam	Kajulu West	Wathorego	5794	6029	11823	2849	1319
							<b>404160</b>	<b>102508</b>	

**Table 2: Proportion of income spent on rent**

LOCATION			Frequency	Percent	Valid Percent	Cumulative Percent
Migosi		Approximately 60%	2	8.0	8.3	8.3
		Approximately 40%	4	16.0	16.7	25.0
		Approximately below 30%	18	72.0	75.0	100.0
		Total	24	96.0	100.0	
	Missing	System	1	4.0		
	<b>Total</b>	<b>25</b>	<b>100.0</b>			
Kenya-Re		Approximately 40%	3	12.0	12.0	12.0
		Approximately 30%	6	24.0	24.0	36.0
		Approximately below 30%	9	36.0	36.0	72.0
		None of the above	7	28.0	28.0	100.0
		<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	
Nyalenda		Approximately 30%	2	7.1	14.3	14.3
		Approximately below 30%	6	21.4	42.9	57.1
		None of the above	6	21.4	42.9	100.0
		<b>Total</b>	<b>14</b>	<b>50.0</b>	<b>100.0</b>	
	Missing	System	14	50.0		
	<b>Total</b>	<b>28</b>	<b>100.0</b>			
Milimani		Approximately 70%	1	4.0	5.0	5.0
		Approximately 60%	1	4.0	5.0	10.0
		Approximately 40%	1	4.0	5.0	15.0
		Approximately 30%	4	16.0	20.0	35.0
		Approximately below 30%	3	12.0	15.0	50.0
		None of the above	10	40.0	50.0	100.0
		<b>Total</b>	<b>20</b>	<b>80.0</b>	<b>100.0</b>	
Missing	System	5	20.0			
	<b>Total</b>	<b>25</b>	<b>100.0</b>			

**Table 3: Percentage of urban population spending more than 30% of income on accommodation**

Population Category	Population in City Urban area	% spending >30% of income on accommodation	Total population
Low income	180161	35	63,056

Lower Middle	98424	44	43,306
Upper Middle	10429	36	3,754
High income	7963	0	0
<b>Total</b>	<b>296,977</b>		<b>110,116 (37%)</b>

Table 4: Percentage of income spent by income quintiles on transport

	Low income Pop=180161		Lower Middle=98424		Upper Middle=10429		High Income= 7963	
	%	Pop	%	Pop	%	Pop	%	Pop
5-25	85.7	154,398	92	90,550	84	8760	48	3822
25-50	14.3	25,763	4	3937	12	1251	12	956
50-75	0.0	0.0	4	3937	4	417	4	318
None							36	2867
Total								

Table 5: Public transport buffered area and the population

Name of Location	Area covered by Buffer sqKM	Pop Density	Total Population
Town	12.83	7439	95442
Kolwa West	1.879	8953	16823
Kondele	1.537	20344	31269
Kolwa Central	5.174	1101	5697
Kajulu West	0.686	1042	715
Kisumu East	3.478	1913	6653

Kisumu Central	4.8516	1152	5589
<b>Total</b>	<b><u>30.4356</u></b>		<b><u>162188</u></b>

Table 6: Classification of landsat images for Kisumu City

	Built up areakm2	Vegetation km2	Water bodies km2	Others e.g. farmlands and bare ground
1994	10.02	150.80	73.79	117.60
2003	12.15	222.09	73.42	44.54
2011	19.19	194.99	73.24	64.79

Table 7: Waste disposal mechanism

LOCATION			Frequency	Percent	Valid Percent	Cumulative Percent
Migosi	Valid	Burning	8	32.0	32.0	32.0
		Private waste collection	16	64.0	64.0	96.0
		Dumping	1	4.0	4.0	100.0
		<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	
Kenya-Re	Valid	Private waste collection	23	92.0	92.0	92.0
		Municipal waste collection	2	8.0	8.0	100.0
		<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	
Nyalenda	Valid	Burning	11	39.3	39.3	39.3
		Private waste collection	1	3.6	3.6	42.9
		Municipal waste collection	1	3.6	3.6	46.4
		Dumping	14	50.0	50.0	96.4
		Others	1	3.6	3.6	100.0
		<b>Total</b>	<b>28</b>	<b>100.0</b>	<b>100.0</b>	
Milimani	Valid	Burning	1	4.0	4.2	4.2
		Private waste collection	20	80.0	83.3	87.5
		Municipal waste collection	3	12.0	12.5	100.0
	<b>Total</b>	<b>24</b>	<b>96.0</b>	<b>100.0</b>		
	Missing	System	1	4.0		

Total	25	100.0		
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**Table 8: Frequency of solid waste collection**

LOCATION			Frequenc y	Percent	Valid Percent	Cumulative Percent
Migosi	Valid	Once a week	16	64.0	64.0	64.0
		None of the above	9	36.0	36.0	100.0
		<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	
Kenya- Re	Valid	Once a week	25	100.0	100.0	100.0
		<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	
Nyalenda	Valid	Once a week	2	7.1	7.1	7.1
		None of the above	26	92.9	92.9	100.0
		<b>Total</b>	<b>28</b>	<b>100.0</b>	<b>100.0</b>	
Milimani	Valid	Once a week	19	76.0	79.2	79.2
		At least twice a week	5	20.0	20.8	100.0
		<b>Total</b>	<b>24</b>	<b>96.0</b>	<b>100.0</b>	
	Missing	System	1	4.0		
<b>Total</b>			<b>25</b>	<b>100.0</b>		

**Table 9: Public green space**

<u>Name of Green Space</u>	Area SQKM	Area Buffered	Pop Density	Est. Pop on Buffer area
Impalla Wildlife Sanctuary	0.273	1.316	6886	9062
Moi Sports stadium	0.038	0.562	7036	3954
Jomo Kenyatta Sports ground	0.072	0.700	1760	1232
Oile Park	0.007	0.152	2608	396
Uhuru Park	0.008	0.099	1760	174
Jamhuri Park	0.032	0.478	1760	841
Taifa Park	0.007	0.204	2608	532
Dunga Public Beach	0.038	0.474	6886	3264
Kisumu Museum	0.041	0.560	2608	1460
<b>Total</b>		<b><u>4.54</u></b>		<b><u>20915</u></b>



**Table 2: Economic activity**

LOCATION		Frequency	Percent	Valid Percent	Cumulative Percent
Migosi	Employed	5	20.0	20.0	20.0
	Self-employed/Business	15	60.0	60.0	80.0
	Unemployed	5	20.0	20.0	100.0
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	
Kenya-Re	Employed	5	20.0	20.0	20.0
	Self-employed/Business	16	64.0	64.0	84.0
	Unemployed	1	4.0	4.0	88.0
	Retired	3	12.0	12.0	100.0
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	
Nyalenda	Employed	9	32.1	32.1	32.1
	Self-employed/Business	17	60.7	60.7	92.9
	Unemployed	2	7.1	7.1	100.0
	<b>Total</b>	<b>28</b>	<b>100.0</b>	<b>100.0</b>	
Milimani	Employed	15	60.0	60.0	60.0
	Self-employed/Business	10	40.0	40.0	100.0
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	

The economic activities of respondents in Table 2. For Migosi, 15 respondents (60%) which formed the bulk of the respondents were self-employed in business. Kenya-Re was similar to Migosi (64% self-employed) although there were 3 retirees. Nyalenda, on the other hand, had 17 (60.7%) self-employed but with a higher number of employed respondents than Migosi and Kenya-Re. Milimani had no unemployed respondents, with 15 (60.0%) and 10 (40%) self-employed. It is therefore evident that Milimani is different from the other three estates in terms of economic activities, perhaps an outcome of the high socio-economic status of its residents.

The above is further confirmed by information in Table 3 which contains monthly income of residents from the four locations.

**Table 3: Monthly income**

LOCATION		Frequency	Percent	Valid Percent	Cumulative Percent
Migosi	Below Kshs 10,000	6	24.0	24.0	24.0
	Between Kshs 10,000-20,000	8	32.0	32.0	56.0
	Between Kshs 20,000-30,000	4	16.0	16.0	72.0
	Kshs 30,000-50,000	2	8.0	8.0	80.0
	Over Kshs 50,000	5	20.0	20.0	100.0
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	
Kenya-Re	Below Kshs 10,000	4	16.0	16.0	16.0
	Between Kshs 10,000-20,000	6	24.0	24.0	40.0
	Between Kshs 20,000-30,000	3	12.0	12.0	52.0
	Kshs 30,000-50,000	3	12.0	12.0	64.0
	Over Kshs 50,000	9	36.0	36.0	100.0
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	
Nyalenda	Below Kshs 10,000	20	71.4	71.4	71.4
	Between Kshs 10,000-20,000	6	21.4	21.4	92.9
	Between Kshs 20,000-30,000	1	3.6	3.6	96.4
	Over Kshs 50,000	1	3.6	3.6	100.0
	<b>Total</b>	<b>28</b>	<b>100.0</b>	<b>100.0</b>	
Milimani	Below Kshs 10,000	2	8.0	8.0	8.0
	Between Kshs 10,000-20,000	2	8.0	8.0	16.0
	Between Kshs 20,000-30,000	3	12.0	12.0	28.0
	Kshs 30,000-50,000	2	8.0	8.0	36.0
	Over Kshs 50,000	16	64.0	64.0	100.0
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	

As for Milimani, 16 respondents (64%) had income more than Kshs. 50,000/=, a category for which Migosi had only 5 (20.0%), Kenya-Re 9 (36%) and Nyalenda 1 (3.6%). Of all the locations, Nyalenda had 20 respondents (71.4%) with income below Kshs. 10,000/=, the highest in this category of income.



**Table 4: Rent**

LOCATION		Frequency	Percent	Valid Percent	Cumulative Percent
Migosi	Below 2,500/=	6	24.0	24.0	24.0
	Between 2,500-5,000/=	5	20.0	20.0	44.0
	Between 5,000-7,500/=	4	16.0	16.0	60.0
	Between 7,500-12,500/=	3	12.0	12.0	72.0
	Over 15,000/=	7	28.0	28.0	100.0
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	
Kenya-Re	Over 15,000/=	18	72.0	72.0	72.0
	None of the above	7	28.0	28.0	100.0
	<b>Total</b>	<b>25</b>	<b>100.0</b>	<b>100.0</b>	
Nyalenda	Below 2,500/=	14	50.0	50.0	50.0
	Between 2,500-5,000/=	8	28.6	28.6	78.6
	None of the above	6	21.4	21.4	100.0
	<b>Total</b>	<b>28</b>	<b>100.0</b>	<b>100.0</b>	
Milimani	Below 2,500/=	1	4.0	4.3	4.3
	Between 2,500-5,000/=	1	4.0	4.3	8.7
	Between 7,500-12,500/=	1	4.0	4.3	13.0
	Over 15,000/=	10	40.0	43.5	56.5
	None of the above	10	40.0	43.5	100.0
	<b>Total</b>	<b>23</b>	<b>92.0</b>	<b>100.0</b>	
Missing	System	2	8.0		
	<b>Total</b>	<b>25</b>	<b>100.0</b>		

From Table 4, which shows the rent paid by respondents from different locations, 40% of Milimani residents did not pay rent and 40% paid Kshs. 15,000/= and above. Similarly, Kenya-Re residents either paid rent of over Kshs. 15,000/= (72%) or lived in their own houses. These outcomes suggest that most Milimani and Kenya-Re residents pay much more than their Migosi and Nyalenda counterparts, or live in their own houses where no rent is paid. It also gives a reflection of the socio-economic class of those who reside in the different locations. The same is indicated in Table 1, containing information on proportion of income spent on rent.

Table: Population within CBD including main business areas and planned residential estates.

	Population		Area (Km <sup>2</sup> )	
	No.	%	Km <sup>2</sup>	%
Formal areas	40,705	91.1	16.79	98.6
Informal areas	3,989	8.9	0.234	1.4
Total	44,691	100	17.024	100