

Strategic planning for urban sustainable development: Challenges and opportunities facing selected towns in Western Kenya

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ABSTRACT: The rapid increase in urban populations in Kenya has awakened development partners to consider their sustainability. Sustainable development principles are hinged on the principles; economically viability, social acceptability and environmental friendly developments. To achieve sustainable development of urban towns, there is need to develop strategic development plans and digital mapping. This paper will discuss challenges facing selected Kenyan towns in developing strategic urban development and digital mapping. The paper will provide some recommendations towards achieving sustainable development. The objectives of the study are to identify planning and development challenges facing middle level towns in Kenya and how they can be urbanised through establishing digital maps and strategic plans. The paper utilizes data collected from two urban towns in Kenya namely; Eldoret and Busia. Data was collected using household schedules, observation and interviews from a sample of 505 households and forty key informants. Some of the challenges identified by respondents include; lack/high demand for land, unplanned/uncontrolled development, rapid increase in population, solid waste and waste water disposal. The paper recommends the integration of sustainable development principles into urban policy and laws. Digital mapping and strategic development plans should be promoted to facilitated ease of information to development partners and reduce urban squalid conditions.

Conference Theme: Sustainability and Urbanism

Keywords: Urbanization, Managed development, Globalizing towns, Equality of resources

INTRODUCTION

Sustainable development is defined by WCED (1987), as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This concept is relevant to sustainable urban development in Kenya, in that these areas should be able to support the needs of present residents without compromising their ability to support future generation of residents. Sustainable towns are those which have stable economic base, improved access and use of social amenities and integrate environmental conservation in to all development plans and programmes.

The conventional urban planning approaches applied in Kenya have been found to be inadequate since they adopted planning laws and regulations from the colonial administration. These approaches did set standards that are too high when it comes to development while in some cases, some of the prepared urban plans focused only on the built up zones of the townships instead of seeing the town as a unit. Subsequent plans have adopted a strategic planning approach which is a more holistic, inclusive and integrated approach which focuses on the; planning of the whole township, residents views, local governance and gender equity among others.

A strategic planning process should be locally owned, not professionals'-driven. The process should help to initiate partnerships with different groups such as other governmental bodies, civil society and private sector. The strategic planning process involved the analysis of structuring elements to the development of the municipality such as the "right to the municipality" (UN-Habitat and UNESCO 2005). This is translated into equal access to land, housing, public space and basic services.

Another aspect to consider in the process is the need for resource mobilization and use of local resources. Sustainability of the planning process and its implementation, financial resources should be identified and boosted. The process should integrate continuous capacity building not only for experts (planners and technicians) but also for the others who will use the strategic plan in their daily operations, such as service providers, surveyors, legal officers, building inspectors. As well as the stakeholders; consisting of all individuals, groups and institutions that can affect or be affected by urban planning, urban development and land management. These stakeholders should be involved in urban planning processes; to make their voice heard; and influence decisions.

BACKGROUND TO STUDY

Eldoret has over the years exhibited continuous expansion in terms of size, structure, distribution and density. In 1962 the town had a population of 19,605, 1969 the population was 18,192, 1979 it was 111,882, 1999 it was 197,449, and 2002 it was 216,356 (Uasin Gishu District Development Plan, 2002-2008). The projected population in 2009 is about 497,449 (Eldoret District Statistics office, 2009, District Development Plan 2008).

The factors that determine Eldoret's high population growth rate include: natural increase (birth and deaths), immigration, industrial and institutional growth of the town, and Municipal boundary expansion in 1988. The strategic location of Eldoret Town has made it an ideal centre for wholesale and retail, servicing of farm tools and machinery, provision of administrative services and entertainment. Inadequate resources especially revenue may hinder timely implementation of capital infrastructural development that has been proposed in the plan.

Busia is located at the border with Uganda and is referred to as the gateway to Uganda and Central Africa. The town was established as a market centre in the 1930s and later grew as an important border crossing point to Uganda. In 1963, Busia Town became the district headquarters of the Busia District and became an Urban Council in 1979. It was upgraded to Town Council status in 1982 and to a Municipal Council in 1990 covering an area of 44 Km².

The Municipal Council of Busia (MCB) sits in between Busia and Teso districts. It is divided into eight civic wards namely; Mjini, Mayenje, Bulanda, Burumba, Ang'orom, Agoloto, Alupe and Amerikwai. The residential areas are also named after the ward names (Table 2).

The major land uses in Busia include residential, commercial, institutional, recreational, industrial, public purpose, transportation, agricultural and public utilities. Development is unplanned and no proper distinction of zones. Land ownership is leasehold (5%) and freehold (95%). This is largely responsible for uncontrolled land subdivision and unplanned development and encroachment on road reserves.

METHODS AND MATERIAL

This descriptive study provides a situation analysis of Eldoret and Busia towns. Each town was divided into five categories of settlements - CBD, high, medium, low density and peri-urban - to facilitate random sampling. These formed the clusters for data collection whereby 305 households in Eldoret and 200 households in Busia were sampled (Table 1 & 2). The household samples were distributed proportionately to the household population in all categories. Household survey questionnaire and interview guides were used to collect data. Since most of the data was qualitative, we sorted them into themes and report them using descriptive methodology.

Table 1: Sampled Households in Eldoret Municipality

Zone	Households	Estates
Zone 1: CBD	30	Eastern Avenue, Hospital Quarters (7 in each) Ndalat Estate, Railways quarters (8 each)
Zone 2: Middle density	70	East View, West View, Kimumu, Chepkoilel, Ainaptich, Marura, Kapsoya, Better Farm, King'ong'o, Pioneer (7 each)
Zone 3: High density	95	Langas, Huruma, Kamukunji (15 in each) Jerusalem, Old Uganda Road/Mwanzo, Sugunanga, Munyaka, Kipkaren (10 each)
Zone 4: Low density	50	KCC, Kapsoya Gardens, Upper Elgon View, Lower Elgon View, West Indies (10 in each)
Zone 5: Peri-urban	60	Yamumbi, Kipkenyo, Kabiemit, Cheplaskei, Mile Nne, Kiambaa, Kapsaret, Baharini, Kuinet, Kiplombe (6 each)
Total	305	

Table 2: Sampled Households in Busia Municipality

Zone	Households	Estates
Zone 1: CBD	40	Burumba
Zone 2: Middle density	40	Mabale (15), Bulanda(10), Amerikwai (15)
Zone 3: High density	60	Marachi
Zone 4: Low density	40	International (20), Omeri (20),
Zone 5: Peri-urban	20	Amagoro (10), Alupe (10)
Total	200	

RESULTS AND DISCUSSION

Major Planning and Strategic Development Challenges facing Eldoret and Busia

Adequate provisions of infrastructure facilities and services including electricity, water, sewerage and drainage are essential for the efficient running of activities such as industry, commerce, and housing. In Eldoret, the provision of these facilities is the responsibility of the government and municipality. However, in recent years the private sector initiatives have increasingly been relied upon to provide them.

1. Water Supply System

Eldoret gets its water from two sources: Two river dam in Kaptagat and Chebara Dam in Marakwet District. The two sources produce over 20,200m³/day of water, operated and maintained by Eldoret Water and Sewerage Company (ELDOWAS). While most of the water distributed to consumers is treated, water from wells remains untreated. The water reticulation system is inadequate with only about 180,000 households within the municipality being covered. Areas that are relatively well covered include; CBD, Kapsoya south, Elgon view, Huruma, Industrial area, Sukunanga, Siani farm, Highlands, Maili nne, Kipkaren, and Eldoret west. Areas underserved include; Chepkoiel university, Kimumu, Munyaka, Ngomongo, Kapsoya north, King'ong'o, Mwenderi, Mwiruti Yamumbi, Langas, and Outspan (Fig 1).

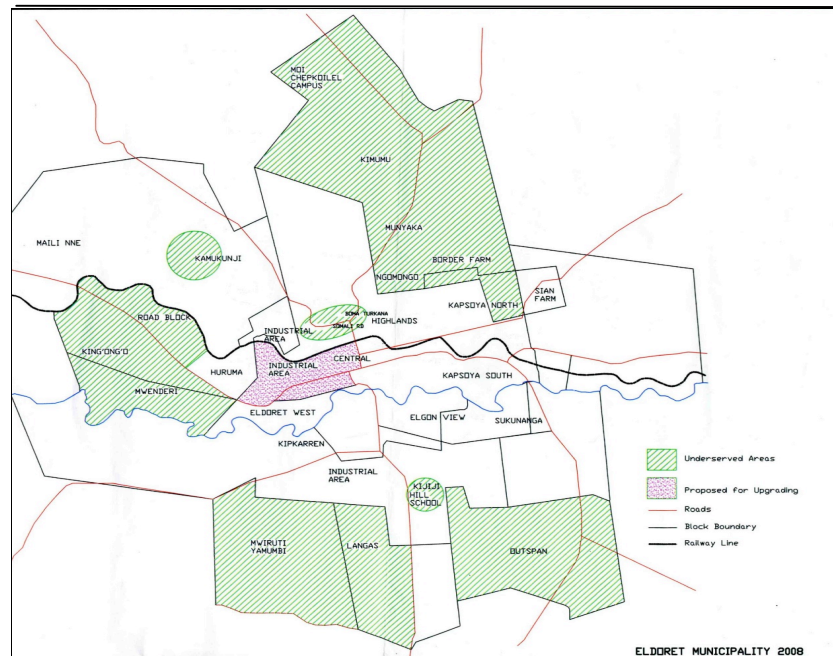


Figure 1: Water supply service areas

Source: ELDOWAS, 2009

1.1 Challenges/Problems of Water Supply System

Data from ELDOWAS indicate a continuous reduction in water levels of their dams. This is caused by indiscriminate deforestation in water catchment areas. Further, the Water Company lacks financial resources to expand water distribution network and relies on dams with fixed capacities meaning it can only sustain a specific daily supply. According to the company the option of diversifying into underground water sources is not possible due to high salinity levels. Emerging issues include; High overheads due high electricity charges; defective pumps and motors; long distance surface water monitoring; unaccounted for water consumption; illegal connections; inadequate supply of meters, defective meters and theft; leakage along service lines and wastage in council owned estates where communal closets are used.

In contrast, the main source for household water in Busia is wells, though a few areas are connected mains the CBD. The slum area in Marachi is least connected to water lines. The residents purchase drinking water from water *kiosk* or vendors, who are a potential source of contamination. A critical problem here is that some wells are close to pit latrines posing great health danger to users of well water. The water *kiosks* are crucial to the provision of water in the absence of other alternatives, but they are sparsely located. .

2. Sewerage and Sanitation

In Eldoret, the disposal of domestic waste is done through conventional sewers, cesspools, septic tanks and pit latrines. Eldoret has one sewerage treatment plant located at Huruma area. The field survey revealed that only 35% of the Eldoret residents are connected to the main sewer line. Areas served parallel to those served by water. ELDOWAS reported areas such as Huruma have been connected to the main sewer line but are yet to connect to households. A major challenge is the inability to monitor levels of pollutants and eco- treatment of sewage.

In Busia, data revealed 92.2% of the residents are not connected to the main sewer; a paltry 7.8% are connected mainly in the CBD. According to reports from Lake Victoria South Water Service Board there are areas within the town which have access to the main sewer line but are yet to be connected. This implies waste water management is a big problem for the MCB and plans should be hastened to fill this gap. Another related problem is managing storm water, which has caused flooding in many parts of the town. They lack drainage channels to direct water to streams and rivers, with most areas in Marachi slum experiences persistent flooding of homes and stagnant storm water, a condition that provides an excellent habitat for disease vectors.

3. Solid Waste Management System

The main solid waste management strategy has been one of 'collect and dump'. The structural measures that have been associated with it include: bins, collection points, landfills, and incineration. The EMC bylaws require every house, business and institution, to own a waste bin. In the Central Business District (CBD), waste is consolidated by the street cleaners to particular places especially around street dustbins, where collection can be done. The EMC is charged with the responsibility of periodically collecting the refuse from the premises and transporting it to the central land fill. Most of collected garbage in Eldoret is disposed off at the EMC landfill at Huruma, along River Sosiani. The landfill creates new types of waste; as garbage decomposes, moisture filters through it producing a toxic liquid leachate that pollutes the river (Khazenzi, 1996). Decomposing garbage also produces two greenhouses gases: carbon dioxide and methane; the two gases responsible for the global warming and climate change (Syagga, 1992).

The survey established that 'scavengers' recover recyclable materials from municipal solid waste of the Eldoret open dumpsite. The potential for recycling in Eldoret is great, as evidenced by the following activities from which people make their living: there exists informal reuse and trade in waste; for example, waste products from the textile industries are used to make mattresses and pillows. The 'jua kali' dealers use scrap metal to make a variety of domestic household wares. Similarly old tyres are used to make sandals. Waste milk packets and charcoal wastes are usually picked by the poor, for lighting their charcoal stoves (jikos), and old newspapers are used by butcheries and retail shops.

The present waste management system for Eldoret like other Kenyan urban centres is showing signs of collapse. Studies conducted by UNCHS (2001), Kibwage (1996), Kiplagat (1998) and Syagga (1991) identified the various factors that inhibit local authorities like EMC, in waste management operations. The survey found the following factors applicable to Eldoret:

- Problems of low pay, poor morale, inadequate staff and resources are evident. This affected infrastructure service provision complicated further by entrenched political (and financial) interests.
- Within EMC, expertise and capabilities in key areas of urban management are lacking. Among the waste management staff are civil servants who lack the decision-making authority, experience, and accountability.
- Since public confidence in EMC is weak, the private sector and community have shown little interest in participating in actions to solve the municipality's issues. The policy and implementation instruments available to EMC are limited towards the adoption of multilevel governance.

- Large sectors of the town's economy are in the 'informal sector', making EMC's traditional planning and regulatory instruments unable to influence development or act upon environmental problems hence inadequate coverage.
- The scale and diversity of the problems confronting the EMC are daunting such that crisis-management has become the normal mode of action. The complex human population dynamics in Eldoret characterized by population explosion has further aggravated the problems.
- There has been lack of focused community participation, which could play a big role in understanding the socio-cultural aspects affecting the generation, collection, disposal and recycling of solid waste in Eldoret. The bylaws and regulations are currently outdated and too weak in penalties to deter offenders.
- EMC uses inappropriate technology, imported from the developed countries. Quite often, the waste collection vehicles break down and lack spare parts, hence making maintenance expensive.

According to UNICEF (2006), poor rubbish disposal is a national problem. Approximately 13% of the urban population disposes solid waste in gardens, 19% in pits and 32% just heap the waste within the compound. These pits and heap disposal are unhygienic in areas with high population concentration. In many slums waste is just dumped behind the houses posing a major hazard to the small children and entire household. Also when it rains, the waste is washed into the water ways while some of the waste blocks the water channels, in such a situation floods are inevitable because it restricts the flow of storm water. It also pollutes the entire land especially the littering of plastic bottles, plastic and other wastes.

Human waste is a big problem with many households lacking decent, latrines/toilets and bathrooms, especially in sub-urban and slum areas. Household's members that lack sanitation facilities ease themselves along roadside, in bushes and maize or banana plantations. Households who claim to have pit latrines share one with up to four to six households which causes congestion and lack of privacy, safety or hygiene. The widespread use of pit latrines also has a bearing on the contamination of the ground water sources. This trend cuts across all slum areas in Busia, where public toilet facilities do not exist, creating a major problem among slum residents. To alleviate these problems, there is need to create public education and awareness campaign on safe waste handling and disposal methods at production points. Private sector involvement should be encouraged and separation of waste for efficient recycling and environmentally friendly disposal.

4. Social Infrastructure

There are two recreational parks in Eldoret: Municipal open ground/park closed to the general public (due to fear of grabbing): and, Sosiani Park., which is open to the general public. The characteristic feature of the Sosiani Park is the absence of public conveniences such as washrooms and solid waste disposal bins. It is also poorly maintained. Some use this garden for hawking purposes and for religious functions such as open air crusades.

The 64 Stadium is the largest sports ground in Eldoret, with a football pitch and facilities for athletics. It however lacks facilities for other sports like hockey, basket-ball and tennis. Kipchoge Stadium is available for athletics and football. There are a number of other small sports grounds in residential areas but these are totally inadequate and are poorly maintained. The situation is worse in the high-density, low in-come residential areas such as Kamukunji and Munyaka.

5. Housing and Settlements

Like many other towns and cities in Kenya, Eldoret is also experiencing exceptional increase in human populations. The increasing urban populations have posed a major challenge to urban planning and management. The EMC also experiences a proliferation of informal settlements. With respect to housing typologies, 36% of the houses in the slum areas are permanent, comprising of stone built walls, cemented floors and roofs with iron sheets, while 13.6% of the houses are temporary houses built of thatched roof, mud walls, and earthed floor. Semi-permanent houses make up 11.7% of the houses, with elements of both the permanent and temporary housing. The remaining 18.4% of the houses are mixed developments of permanent and/or semi-permanent and /or temporal houses as represented in the pie chart above (Figure 2). Housing ownership varies from squatting, rental, employer provided housing to owner occupier, at varying levels in respective settlements as shown in the chart below (Figure 3).

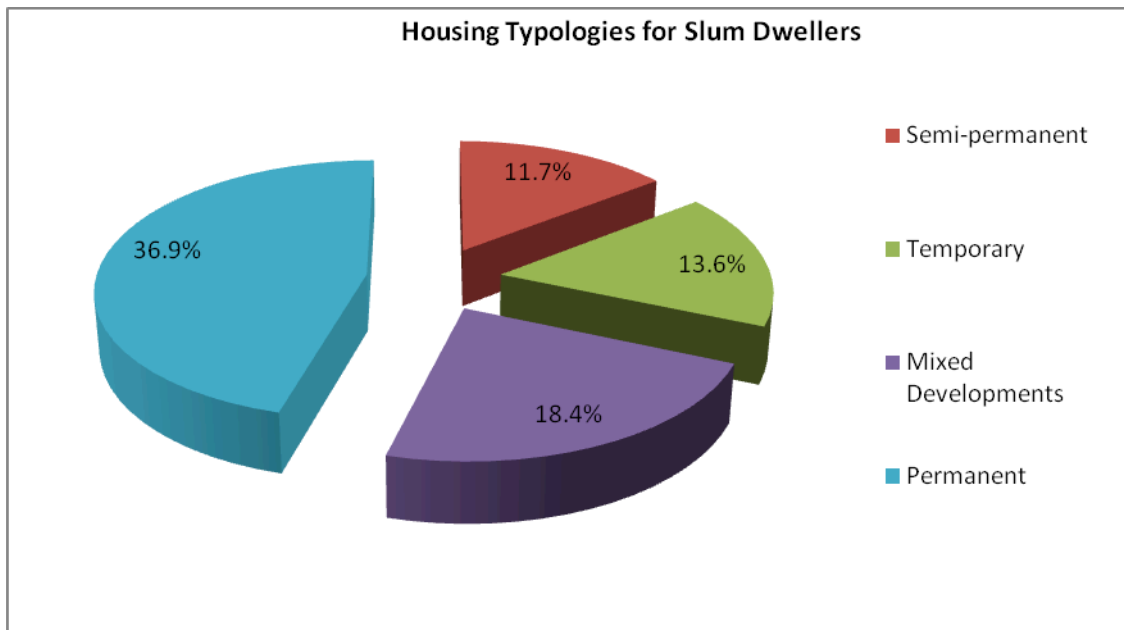


Figure 2: Housing Typologies for Slum Dwellers in Eldoret

Source: Field Survey, 2009.

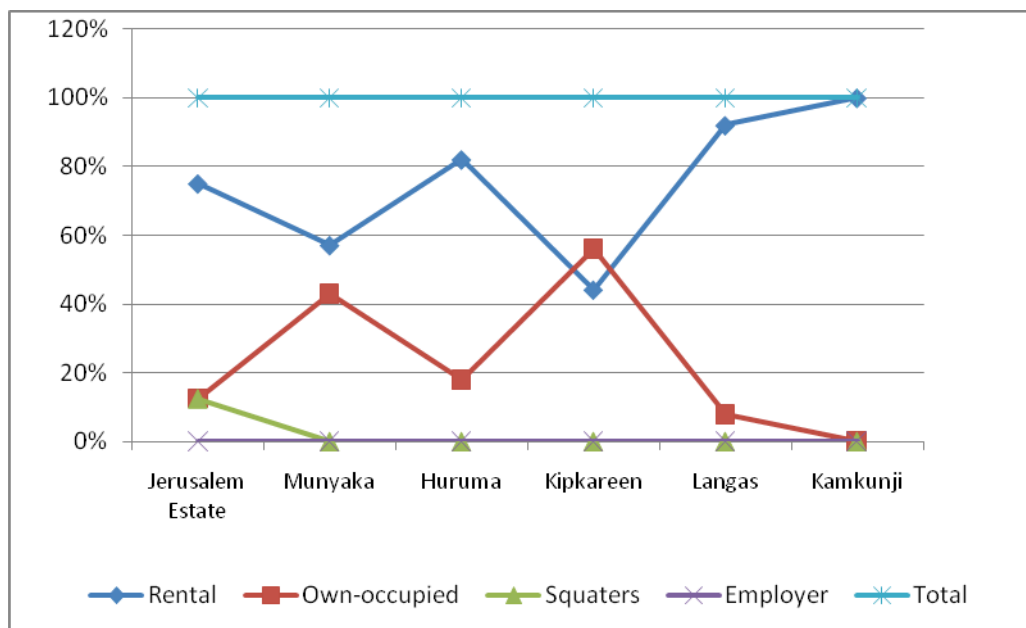


Figure 3: Housing ownership in Eldoret

Source: Field Survey, 2009

6. The Eldoret Municipal Abattoir

At the Eldoret Municipal abattoir, ante-mortem examination is nil as animals are off loaded and conveyed straight to the slaughter halls. Animals are slaughtered using the Muslim technique of decapitation on the bare floor with skinning or burning of the carcasses commencing on the same spot. Post-mortem examination is done perfunctorily and is restricted mainly to the examination of offal and incision of some lymph nodes. Evisceration and dressing are done right on the floor in the slaughter halls. With inadequate slaughtering and disposal facilities, the abattoir has also become a source of infection and pollution, attracting domestic and wild carnivores, rodents and flies, which are vectors of diseases. The area is rampant with filth and scattered rubbish, which is left uncollected, apart from the blood draining trenches through which the filth is scattered rather than eliminated. Hygiene problems are not limited to slaughtering but are also associated with incorrect processing and marketing

practices. Under tropical conditions, food of animal origin tends to deteriorate rapidly and become a vehicle for gastrointestinal infections, endangering consumers' health.

7. Historical Heritage Buildings and Monuments

We live our lives against a rich backdrop formed by historic buildings, landscapes and other physical survivals of our past. Building materials and styles can define region's localities and communities. Historic landscapes or iconic buildings can become a focus of community's identity and pride. At a more local level, a historic church or park can help define a neighbourhood and create a sense of local cohesion. Retention of heritage buildings has environmental sustainability benefits. Conserving heritage buildings reduces energy usage associated with demolition, waste disposal and new construction, and promotes sustainable development by conserving the embodied energy in the existing buildings. There are few known historical buildings and monuments in Eldoret include; Kenya National Library building, State Lodge, High court premises, Reformed church near Kihuga square, and buildings associated with Asian immigrants.

8. Eldoret Road Networks and Travel Patterns

The layout of Eldoret's main road system is reasonably well planned and spacious, but its development has not been able to keep up with the explosive growth of population and road traffic. The street pattern remains largely radial, focusing on the CBD, with the arterial system dominated by the main international Uganda road traversing the town from south-east to north-west, and Kisumu and Iten roads traversing from the south to the north. The three roads intersect in the CBD. Ribbon development occurs along the Uganda, Kisumu, and Iten roads as they are the most important linkages between the town and the important population centres, industries, university campuses, international airport, and agricultural areas as well as major towns of Nairobi, Kisumu, Nakuru, Bungoma and Kakamega.

Busia shares all the problems as other towns in Kenya, but is compounded by its position as a busy border town. The town has limited road networks, which are often narrow and poorly maintained or unpaved. Congested roads with an incompatible mix of both motorized and non-motorized vehicles travelling at widely different speeds as facilities for pedestrians and cyclists are virtually non-existent. Trailer menace is common to observe in this border town. Rapid increase in ownership and use of private cars and motorcycles has made Busia suffer from high traffic fatalities, especially among pedestrians, pedal cyclists, and motorcyclists.

9. Non - Motorized Transport Facilities (NMT)

NMT facilities are largely absent within the two towns including the CBD. Current economic developments have promoted the use of bicycles, motor cycles and *tuk tuk* by residents; have caught Municipalities unaware and unprepared. This has caused congestion in CBD and major highway roads resulting increased and fatal accidents since most cyclists and *tuk tuk* drivers are not adequately trained. Results from household surveys indicate 63% of the first trip made by the household head on a typical day is made on foot. Generally, this is the most important trip during the day as it is often made to work, business, or to look for a way of livelihood. This statistics shows that walking remains the vital mode of travel for most of the residents in Eldoret and Busia.

Provision of facilities for NMT users and public transport does not seem to be in the development agenda of the municipalities. The path taken is that of encouraging the freedom and dominance of the transport system by individual motorized transport. According to the household survey, the mobility market of these two modes for the first and most important trip is 86% of all trips, yet infrastructure facilities are provided for 10% of the trips made by cars. The lack of termini outside the central areas for intercity PSVs is another contributor to traffic congestion in the towns.

The sharply increasing levels of private motor vehicle ownership and use, in particular, have resulted in alarming levels of congestion, air pollution, noise, and traffic accidents. This is because private car is the most inefficient road user as far as space occupancy, pollution control and congestion management are concerned. A private car occupies at least 15 times more space per passenger in comparison to that of a large bus. Moreover, it uses significantly higher amount of fuel and discharges higher amount of pollutants per passenger than that of a large bus. Traffic management function is almost entirely left to the Kenya Police as traffic lights and road signage are either absent or not functioning. As the traffic builds up due to one or a possible combination of the myriad causes of traffic snarl-ups, including grid-locks, high volumes, etc, the only way out of cases lies with the response of the police.

Table 3: Number of heavy cargo tracks passing through Busia (8th -15th November 2011)

Date	Fuels	Transit	Exports	Imports
8th Nov 2011	65	17	60	53
9th Nov 2011	101	32	90	67
10th Nov 2011	90	29	82	80
11th Nov 2011	88	40	85	64
12th Nov 2011	121	28	80	81
13th Nov 2011	101	21	69	49
14th Nov 2011	81	32	77	119
15th Nov 2011	100	17	58	73
Total	747	216	601	586

Problems facing Busia municipality include; *boda boda* menace, which throng the town, lack of adequate parking for lorries and trailers that transit through the town (Table 3), insufficient parking for *matatus* and buses, hawkers along the main roads.

10. Trends in land use and economic activities

As Eldoret continues to grow in population, it is also spreading outwards. The lack of effective planning and land-use control has resulted in rampant sprawled development extending rapidly in all directions, far beyond the Municipality boundaries into the distant countryside. That has greatly increased the number and length of trips, reinforcing the use of motorized transport. Longer trip distances make walking and cycling less feasible, while increasing motor vehicle traffic makes walking and cycling less safe.

The congestion in the central areas of Eldoret also encourages sprawled development, with many business and commercial entities opting to move out of congested central areas to more open lands on the periphery of the town where it is easier to reach by motorized transport and parking spaces are available. This situation has also been encouraged by the comparatively low cost of land at the periphery and uncontrolled land development. Indeed, county councils in the suburbs, like Wareng, apply less stringent land-use regulations within their boundaries to lure economic development to their jurisdictions. Such land-use policies discourage development in the centre and encourage both companies and residences to seek locations on the suburban fringe. Moreover, the Council has permitted scattered commercial and residential development in outlying areas without the necessary infrastructure such as roads, public transport, and hospitals.

The leap-frog development typical of suburban sprawl tends to follow major highways like the Uganda, Kisumu and Iten Roads. Another aspect of uncontrolled development is that it leads to land use change from agricultural to commercial and residential with the consequences of making the cost of necessary agricultural supplies to the town residents more expensive because of the increased transport costs. In addition, sprawl leads to rapid depletion of forest land and green areas. In general observation shows sprawled development generates long trips between residences and almost all other trip destinations. In most cases, there is inadequate transport infrastructure to serve these new suburban developments and the residences located around them.

11. Environmentally Sensitive Areas

Eldoret and its environs are drained by the Sosiani River that collects waste generated in the town, heavily polluting its waters with solid, liquid and organic wastes. The polluted water has a strong impact on the town's inhabitants and other living organisms as well as the environment in general. Inadequate environmental awareness and enforceable policies, inadequate commitment from the Eldoret Municipal Council towards the restitution and refurbishment of the river and the increase in urban area population because of the mass exodus from rural to urban has made all the efforts of achieving a clean and safe basin futile. There are a number of polluters that contribute mainly to the pollution, and degradation of the Sosiani River. One of the most outstanding contaminators is the car wash sheds that are located near the river.

The EMC dumpsite is an open land disposal site, located in Huruma area, where the indiscriminate deposit of solid wastes from Eldoret Municipality takes place with no measures to control the operation and to protect the surrounding environment. This dump site is visually characterized by widely spread un-covered wastes. The waste is dumped into an abandoned quarry where they are left uncovered or simply burnt. All garbage from Eldoret's industries, hotels, restaurant, and residential areas is dumped here. The dumpsite has a number of co-operatives of youth and women which have come up to sort out and recycle some of this waste.

The environmental impact of the dump site arise from the type of waste including; industrial wastes (used chemicals, raw materials, expired products) agricultural wastes (fungicides, herbicides) and hospital waste (packaging materials, containers, used syringes and other sharp, biological waste and pharmaceuticals). It is therefore feared that the soil adjacent to and within the dumpsite is likely to be contaminated with heavy metals, putting at risk the lives of nearby Huruma residents. It was also observed that the site poses a serious air pollution problem, which affects the health of human beings and scavenger animals. This is evident in the huge amounts of smoke emanating from the dumpsite. This particularly affects the residents from the neighbouring Huruma, Mwenderi and Shauri settlements. Additional problems from leachate, could affect ground water systems.

The dumpsite equally poses serious social and political threats. Being an open space the dumpsite encourages and attracts many children to turn to street life since they scavenge for items from the dump site which they sell. Due to high poverty levels in Huruma slum and its neighbouring settlements, some parents encourage their children to go to the dumpsite to fend for themselves and also support the family. While some critics will defend this habit, it is a disastrous short term solution to a larger, complex and longer social and economic problem. Groups of people particularly street boys and those working at the dumpsite select items and food stuffs dumped by Lorries and sell them back to slum residents at prices lower than retail rates. Hygiene is not observed, the products could be contaminated and sometimes the food is expired. This puts at risk the lives of many slum residents.

12. Eldoret quarry sites

Eldoret has four major quarries namely; Gituro; Kamukunji; Maili Nne and Sirikwa. There are however small quarries within and outside the municipality. The EMC applies the Environmental Management and Co-ordination Act (EMCA) regulations in licensing quarries. EMCA requires for an environmental impact assessment to be carried out before any quarry activity is allowed. EMC consequently asks for a comprehensive environmental

impact assessment report before licensing any quarry activity within the municipality. This field survey however, found out that there are some quarries that operate in disregard to the environmental legislations.

None of the quarries in the area conduct annual environmental audit studies as required by the National Environmental Management Authority (NEMA). The destruction of the soil layers causes soil erosion in the affected environments. This makes such land unfit for both human settlement and agricultural production since the land becomes derelict. Such land can only be used as landfills when the quarries are abandoned. There is dust, noise and vibration from quarrying processes (i.e. blasting, crushing etc) in the area, which becomes a health hazard to both the miners and the neighbouring population.

13. Disaster Management (Fire Preparedness)

The fire department in Eldoret relies on the main water supply. According to the fire officers, the CBD area should have fire hydrants 100m apart; whereas in low-density developments fire hydrants should be 300m apart. The existing hydrants are few, the last having been installed by the German Engineers in 2000 for ELDOWAS. The rest were installed during the colonial periods. The requirements for the fire hydrants for buildings are as follows: dry-risers for buildings between 18m and 60m, wet risers for buildings taller than 61m, and hose-reels for buildings below 18m. The existing hydrants are not all accessible to the fire engine. Roads within the municipality are in poor state because of informal settlements and congestion.

14. Challenges

The two towns face a number of challenges including:

- Lack of land for development.
- Encroachment on public lands by developers.
- Political interference.
- High taxation on investments by local authority and central government.
- High cost of construction materials.
- Insecurity.

General Challenges Facing the Urban towns in Kenya

Rapid population growth with an estimated annual growth rate of 8%, nearly three times the national average. The population is expected to grow to more than 500,000 persons in the next 5 years by 2015. This poses challenges to the council's ability to provide services and if no proactive planning is done, this may contribute to growth of informal settlements and serious constraints in the provision of health services, increased crime rate, urban poverty and other attendant problems.

The emergence of many industrial and commercial activities continue to place a heavy demand on the urban transport system, with increased vehicular traffic causing congestion during peak hours, pressure on street parking and environmental pollution. The Council has inadequate technical staff, equipment and machinery to be able to provide services to the required standards and demands of the residents.

The high wage bill (67% of revenue) is making it difficult for the council to meet the demands of the residents. Costs for provision of urban services have risen more steeply than the growth of EMC revenues due to uneconomic tariffs in the schedule of fees and charges. Residents see no clear link between paying taxes and service improvements and their distrust of Municipal is widespread. Registers of revenue sources are maintained manually and are not updated on regular basis thus making monitoring and evaluation difficult. Unplanned and uncoordinated urban growth, for example illegal subdivisions, informal land transactions are rampant.

15. Financial Management

The fiscal management of the municipality comprises revenue mobilization and expenditure administration/transactions. This mainly depends on the revenue generated either locally or from external sources. The current devolved process calls on county governments to be responsible for their financial

management. This is a challenge to all the local authorities within the county to improve their revenue generation mechanisms for smooth development of the county government. The major sources of revenue available to Municipalities can be grouped into two: Internally Generated Fund (IGF) and Local Authority Transfer Fund (LATF).

CONCLUSION

In order to enhance sustainable urban development in Kenya, there is need to integrate strategic urban planning. This will provide information to development partners interested in collaborative development of urban areas. Strategic planning indicates investment opportunities, available resources and challenges likely to affect business. The availability of the information on digital mapping and ICT encourages investors to adopt the plans that are based on sustainable development principles. The preparation of base maps, comprehensive development master plans ensures coordinated development; initializes programmes for urban renewal and slum upgrading; establishes urban information database for planning and raises citizens' awareness and access to information.

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