

Understanding Urban Environment Problems In The Newly Urbanizing Areas Of Kenya, A Case Of Narok Town

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Abstract: Like many other countries in developing world, Kenya has been experiencing rapid urbanization. Although urbanization is associated with social and economic transformations, the trend is also associated with an increase in urban environment problems. The environment is considered as the gear to economic activities and the well fare of human beings. It is therefore important to understand the environmental consequences that comes with urbanization so as to safe guard the economy and the well fare of human beings living within and without the urban area. The study was conducted in Narok Town with a major focus of understanding urban environmental problems that the newly urbanizing areas in Kenya are facing. The study was conducted in five areas that make up Narok Town which include Lenana, Total, Majengo, London and the town center. The study was conducted using descriptive survey where questionnaires were administered to the respondents who were selected randomly to identify urban environmental problems in Narok Town. Observation and was also done in the study to identify urban environmental problems in Narok Town. Data that was gathered from the questionnaire was analyzed using SPSS Package version 20.0 and presented in forms of figurers and text. Data from observation was analyzed qualitatively and presented in form of text. The findings of the study indicate that Narok town is experiencing urban environmental problems which include development of slums, inadequate drainage systems.

Index Terms: Rapid urbanization; Urbanization, Newly urbanizing world; Urban environment; Urban environment problems; Environmental consequences

1 INTRODUCTION

Globally, more people live in urban areas than in rural areas, with 54 per cent of the world's population residing in urban areas in 2014, this trend was observed since 2007 when in history the global population in the urban areas outgrew the global rural population and thereafter the world population remained predominantly urban. Urban population is projected to be 66 per cent by 2050. Although urbanization has been taking place in every part of the globe there are differences in levels of urbanization by regions. Latin America, Caribbean and North America indicate the highest levels at 80 or above percent, Europe 73%. Africa and Asia on the contrary are considered to be more rural than urban with 40 and 48 % of the respective population living in the urban areas. However, projections indicate that the developing countries have been experiencing rapid urbanization; as noted by Bocquier (2005) continuing population growth and urbanization are projected to add 2.5 billion people to the world's urban population by 2050, with nearly 90 per cent of the increase concentrated in Asia and Africa.

2 LITERATURE REVIEW

Although cities and urban areas have been considered as engines of economic and social transformations with benefits such as creation of employment opportunities, technological and infrastructural advancements, improved transportation and communication, quality educational and medical facilities, and improved standards of living, urban areas are also associated with an array of problems among them included urban environmental problems. The intensity of the urban development problems is more felt in the developing countries. The scenario can be attributed to rapid rate of urbanization, rapidly growing population, inability to effectively tackle climate and environmental risks and inefficient governance Goal 11 of the sustainable development goals (SDGs) calls for sustainable cities and communities("UN WCED 1987 Brundtland Report.pdf," 1987). As the world continues to urbanize, sustainable

development challenges will be increasingly concentrated in cities. Due to the social and economic benefits offered by the cities and urban areas more concern is usually given to the social and economic issues while less priority is given to the environmental concerns. Urban environment is anthropogenic in nature. Urban environmental concerns if not addressed will lead to improper functioning of cities and urban areas due to the effects associated with urban environment degeneration. Developing countries are characterized with urban environmental degeneration (Voigtländer, Breckenkamp, & Razum, 2008). Urban environmental problems emanate from high levels of poverty especially in women and children, industrialization and changes in consumption patterns. Environmental degeneration is manifested by inadequate basic infrastructural amenities such as lack of water pipes, electricity and road network, poor waste disposal which is characterized mainly by indiscriminate refuse disposal. Substandard housing is also a manifestation of urban environmental degeneration; with poor building layout, inadequate drainage, inadequate roads between them, it is difficult to manage refuse and waste water leading to water pollution, land pollution, air and noise pollution which on the other hand have effects such as environmental health issues which include spread of water borne and airborne diseases and subsequently leads to loss of human and ecological life. Understanding urban environmental problems is paramount to achieving Goal 11 of the sustainable development goals; all operations in the urban areas are based on the natural resource base of the area or of the surrounding areas, on the other hand, all the waste from the city or the urban area is disposed off to the surrounding. It is therefore important to understand urban environmental problems and developing strategies for their management which will help achieve sustainability in all the dimensions in the cities and urban areas.

3 MATERIALS AND METHODS

3.1 DESCRIPTION OF THE STUDY AREA

The study was conducted in Narok Town in Narok County, Narok Town is located 1827 meters (5,997 feet) in altitude 01°05'S 35°52'E (KNBS &SID, 2018). Narok Town is located along the great Rift Valley in the west of Nairobi-capital city of Kenya. Narok Town is the main Town in Narok County and therefore serves as a host of most county administrative offices. The natives (Maasai) refer to the town as Enkare Narok which means "dark water" after the Enkare Narok river which flows through some parts of the town. This area also has temperature of about (8 to 28 degrees Celsius), also it has two rainy seasons and the rainfall ranges between 500mm to 1800mm per annum (<http://softkenya.com>). Population of the town is around 40,000 people the dominant communities being the Maasai community and some other communities doing businesses like the kikuyus, Kisii's and others. Although Narok town extends all the way to 692 km² the only area that is concentrated with urban activities is 1.5 km² (KNBS&SID,2013)and therefore the study was conducted in the areas within 1.5 km² around the central business district which include Lenana, Total, London and Majengo areas of Narok Town.

3.2 SAMPLING TECHNIQUES

The respondents of the study were selected randomly from Lenana, Total, Majengo, London and town center area of Narok Town. The respondents in this study constituted of the household heads who are the family bread winner or the most respected person in the family at the time of survey. The household heads were drawn by dividing the total population size of Narok Town with four (4) which is the average family size in Kenya (United Nations, 2017) which will make a total of 11,143 households. Adopting Naissuma's formula (2000)

$$n = \frac{NC^2}{C^2 + (N - 1) e^2}$$

Where;

N =Total population, C= coefficient of variation, n=Sample size and e=Margin of error

With a total population (N) of 11,143 households, coefficient of variation(C) being 0.5 and a margin of error of 0.05, the sample size (n) for this study is 99 households. The sampled households were divided equally among the five areas within the study area, twenty questionnaires were therefore administered in each of the five areas in the study area.

3.3 MIXED RESERCH DESIGN

This study employed observation and questionnaire method. The rationale behind this is because urban environmental issues are very difficult to measure (Loghin & Mur, 2001) and therefore calls for use of more than one method in order to get valid results for any study. The questionnaires were administered in all the five areas that make up Narok Town in order to identify the environmental problems in Narok Town. The questionnaires had both open ended and closed ended questionnaires which

allowed the researcher to get more detailed information about the study phenomenon. The respondents were assured of confidentiality of the information that was sought from them. Semi structured observation was also adopted in this study where the researcher had a list of themes which were used as a guide to observe the urban environmental problems in Narok town, however the researcher was not only restricted to the themes that were included in the list. This allowed the researcher to remain focused on the subject of study but also gave room for exploration of more problems that are yet to be identified in the already existing literature as well as the intensity of the problems in Narok Town.

3.4 DATA COLLECTION

The data was collected using questionnaires that were administered in Lenana, Total, Majengo, London and Narok town center of Narok town. Data was also collected by observation and photography mainly for ensuring validity of the data that was collected by questionnaire. The data was subjected to analysis using Social sciences Statistical Package (SPSS) version 20.0

4 RESULTS AND DISCUSSION

4.1 Development of Slum

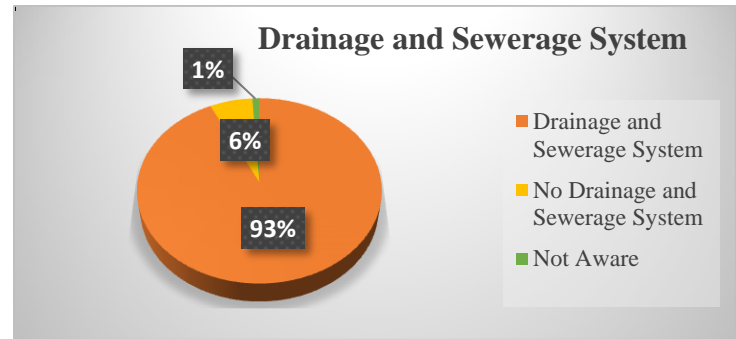
Like many other towns in the developing world, Narok town has been urbanizing at a rapid rate. The rapid rate of urbanization in Narok town is attributed to many factors such as the development of higher learning institutions such as Maasai Mara University, Narok Teachers training college, Mara vocational and training center around the town, rural urban migration mainly for people to seek for employment and better social amenities within the town as well as people coming to look for greener pastures such as jobs in Narok Town. The influx in the population has led to the need to create more housing units in Narok Town. However, with lack of proper urban planning policy in place, development in Narok town is not well controlled. This has led to creation of shelters using the readily available materials such as mud, tins, iron sheet etc. Besides this, the housing structurers also do not have access to basic amenities such as light, water, supply, drainage system, roads, sanitation and medical facilities. Slums in Narok Town are mainly manifested in three areas that is in Majengo, Total and London where the residents use the readily available material for development of housing. Basic infrastructural services are also missing in the three areas where as in Narok Town and Lenana residential areas, the dominant building materials are mostly the permanent building materials. The already developed infrastructure in Narok town is deteriorating, for instance regardless of the County government of Narok County providing solid waste collection services to the residents of Narok Town, some areas are inaccessible by the waste collection tracks due to lack of enough space in the access roads that can be used by the waste collection tracks. Currently, houses in Narok Town are not connected to a sewerage system, the option for waste management that is in place is the use of septic tanks which requires emptying after a period of time, failure to which it poses an environmental health issue to the locals, some houses owners in Narok delay to empty the pits and therefore pose a threat to the residents as well as

the environment when it waste water leaks from the pit. The dominant characteristics of a slum which include high population density and lack of access to basic infrastructural services make the slum dwellers prone to diseases such as diarrhea. High population density and overcrowding in the slums is also associated with rapid transmission of airborne diseases. Slum dwellers are also prone to disasters such as fire due to the substandard materials used for the construction of the shelters as well as lack of proper planning of the houses making them inaccessible especially incase of a fire breakout by the fire fighters. Lack of a well-structured house that is well ventilated and cannot adapt to climate change put the dwellers at more health risks such as allergies, asthma as well as diseases associated with extreme changes of weather.

4.2 Inadequate drainage and Sewerage Facilities

Narok Town has been experiencing problems related to lack of drainage system and sewerage system. From the findings obtained from the study area, it was noted that majority of the respondents (93%), indicated that in Lenana, Narok Town center, Total, London and Majengo Slums did not have any appropriate connectivity to any drainage and sewerage system.

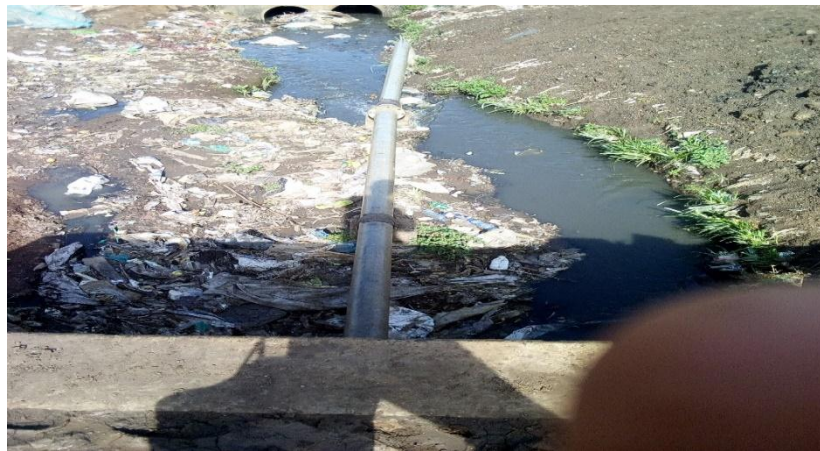
Fig 1: Drainage and Sewerage System in Study Area



Source: Researcher (2019)

Narok town is dominated by open drainage systems which are in most cases not properly managed, other times the drainage systems are clogged with refuse which makes the scenario get more critical. Lack of a proper drainage system in Narok town is associated with the occasional flooding in Narok Town as the existing drainage system is not capable to maintain the volume of water during the rainy seasons. Lack of a proper drainage systems is also associated with water pollution as well as land pollution which on the other hand is associated with environmental health problems such as spread of water- borne diseases.

Fig 2: A clogged open drainage system in Narok Town Centre

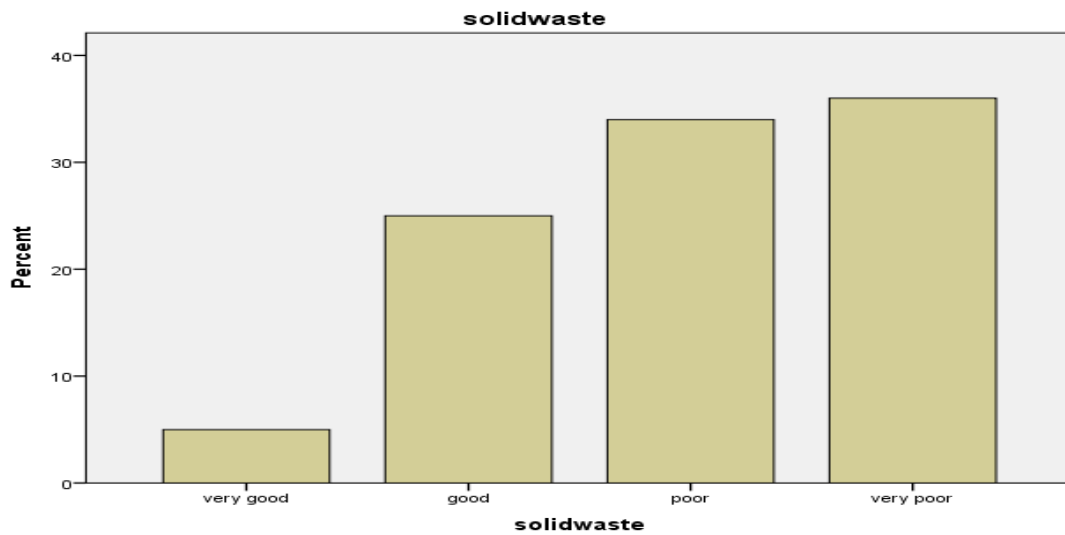


Source: Researcher, 2019

Although the government through the Rift valley Water and Sewerage Board has set aside 1.5 billion shillings to build a sewage system in Narok Town expected to serve 50,000 town residents, currently, Narok town is not connected to a sewer line, most of the houses are connected to a septic tank which requires frequent emptying, however some house owners in the town delay the emptying of the septic tank which consequently impact negatively on the Narok Town residents as well as on the environment. Effects of lack of a sewer line is more felt in areas which have taken the form of an informal settlement that is in Majengo and Total areas near Maasai Mara University due to lack of adequate space for development of the septic tank making it necessary to empty the tanks more frequently.

4.2 Poor refuse management

Solid waste management is a problem in Narok Town. Although the county government of Narok who takes full responsibility of solid waste management in Narok town has made some attempts to manage waste in Narok Town, the efforts can be considered insufficient as most of the respondents of the town do not have access to adequate refuse management service. Solid waste management problem is severe in areas where the building layout take the form of slums since the areas are inaccessible by the Narok County Government pick up trucks. This has led to low rates of waste collection in the inaccessible areas.

Fig 3: Ratings of solid waste management service in Narok Town

Source: Researcher, 2019

The results from the figure above corroborates with observations done during the study. Open waste dumping and open burning are evident in Narok Town, this comes as

a result of the residents of the town having low if not no solid waste management service.

Fig 4: Open dumping and open burning; dominant solid waste disposal practices in Narok Town

Source: Researcher, 2019

The problems get more complex because of the population density in the areas which is directly related to the population size and density of the area. Other factors that can be attributed to poor solid waste management in Narok Town include lack of a solid waste collection site, lack of political good will, low prioritization of the service hence low funding for the service (Mwangi & Thuo, 2015) Lack of a proper solid waste management system is associated with land degradation, air pollution, water pollution and consequently environmental health problems.

4.4 Inadequate water supply

Due to high population density in Narok Town and the fact that the town is located in a semi-arid zone, access to adequate water supply in Narok town is a big problem. Although there is a government body that deals with water issues in place (Narok Water and Sewerage Company) who make their attempts to supply the residents of Narok Town with adequate water, results from the study shows that there is still a big gap between water demand and water supply in Narok Town; only 28% of the total population in Narok Town feels that they have access to adequate water supply.

Fig 5: Indication of inadequate water supply in Narok Town

		Water Supply			
		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
<i>Valid</i>	<i>Adequate</i>	28	28.0	28.0	28.0
	<i>Inadequate</i>	72	72.0	72.0	100.0
	<i>Total</i>	100	100.0	100.0	

Source: Researcher, 2019

Although Most of the houses in Narok Town are connected to the water supply system and have installed water pipes, most of the houses do not have access to adequate water supply especially during the dry season when the water levels in River Engare which is the main water body in Narok Town go down. This leads to water vendors taking advantage of the situation and supply water to the residents. The study results from observation shows that the water vendors use 20 liters water jelly cans which are ferried to the consumers using pull carts; the quality of water however might be distorted as a result of poor handling of water from the source to the consumer. Inadequate water supply is associated with spread of water borne diseases such as cholera and high infant death rates.

4.5 Flooding

Flooding is a common occurrence in Narok Town. The geographic location of Narok town where the town is located in a valley is the major factor that is attributed to flooding in Narok Town. Other factors attributed to flooding in Narok Town include inadequate drainage systems which are mostly clogged with waste as well as deforestation of the Mau water catchment area hence increase in water from the catchment down streams hence flooding in Narok Town.

Fig 6: A section of Narok Town affected by flooding



Source: Sunday Nation, November 26 2017

Flooding in Narok Town has got implications not just on the social and economic aspects but also on the environment. Flooding in Narok Town leads to mixing up of the water from the septic tanks with the runoff water, the mixture then flows to the water bodies downstream hence tampering with the quality of the water in the water bodies, water contamination as a result of flooding also comes as a result of the disposal of the debris /Street refuse in the water bodies as well as chemical contamination of the water bodies when runoff carry with it the chemicals from the surrounding farms garages among other areas that are

dominated by anthropogenic activities. Contamination of the water bodies has got environmental health effects which include spread of water borne diseases such as cholera and diarrhea which are very preferent after the occurrence of the flooding in the areas that are serviced by rivers that surrounds Narok Town (Stanley, 2014)

4.6 Traffic congestion

Narok Town is connected to three major highways that intersect at the town center. The highways include Narok-Nakuru, Narok- Bomet and Narok- Maai-Mahiu highways. Narok Town is also connected with a number of access roads which connect one part of the town to the other. However, observation during the study indicated that traffic congestion is becoming a concern that requires attention. The factors that are attributable to traffic congestion in Narok Town include poor planning, where the access roads are not very clear and in most instances are used as motor-bike pick and drop points as well as ignorance by the road users, most of the motorists do not make use of the traffic signage. Observations during the study clearly indicated that traffic congestion becomes more intense in Narok town in the morning hours between 8.00 Am and 9.00 Am and late in the evening from 4.00 Pm. Traffic congestion is considered the biggest contributor to air pollution in urban areas, air pollution on the other hand is attributed to global climate change, acid rain and the associated human health effects.

5 CONCLUSION

Narok town being a town in a developing country urbanizing at a rapid rate. Although urbanization has ben associated with social and economic transformations, urbanization in Narok town is attributed to some major environmental problems which include development of slums, inadequate drainage and sewerage facilities, poor refuse management, inadequate water supply flooding and traffic congestion. This research paper will be relevant to the County Government of Narok specifically the department of Environment. The paper will act as a departure point for the management of urban environmental issues.

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