PERCIEVED EFFECTS OF URBANIZATION AND ENVIRONMENTAL HEALTH PROBLEMS IN KANO METROPOLIS

BY

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A DISSERTATION SUBMITTED TO THE DEPARTMENT OF PHYSICAL AND HEALTH EDUCATION, IN PERTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE (M.Sc) IN PHYSICAL AND HEALTH EDUCATION (HEALTH EDUCATION)

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DECLARATION

I hereby declare that this work is the product of my own research efforts; undertaken under the supervision of Dr. Abdullahi Ibrahim Darki and has not been presented and will not be presented elsewhere for the award of degree or certificate. All sources have been dully acknowledged.

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CERTIFICATION

I certify that this research work was conducted, written and compiled by Jamila Sani Kankia (SPS/10/MHE/00036) I also certify that to the best of my knowledge, this work was never presented wholly or partly for the award of degree or for publication elsewhere. All sources of publications and other related citations in this research have been reflected in the reference section of this work.

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APPROVAL

This research work has been read and approved as meeting the requirements for the award of Master degree in Physical and Health Education (Health Education) in the department of Physical and Health Education Bayero University Kano.

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ABSTRACT

This study investigated the perceived urbanization factor of environmental health problems in Kano metropolis. Four research questions were formulated; and four sub-hypothesis were developed. The study adapted descriptive survey design. The population of the study comprises of 1,688,905 male and female aged between 20 and above residing in six (6) metropolitan local government area of Kano state. Three hundred and eighty-four (384) participants were drawn for the study using purposive sampling techniques. The instrument used for this study was researcher developed questionnaire with estimated reliability of 0.79. Three hundred and eighty-four (384) copies of the questionnaire were distributed while three hundred and fifty nine (359) were duly completed and return and used for analysis. Chi-square was used to test the hypotheses. All tests are performed at alpha level of 0.05. The findings revealed that Commercial 2 253.794 df2 p 0.05), are all significant factors to environmental health problems in Kano metropolis. It was therefore recommended among others that Kano state government should re-organized commercial areas to modern markets so that environmental health problems can easily be controlled, people should be enlighten on the danger of living in overcrowded houses and the provision for ventilation should also be consider during construction of building.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The 20th century has seen the emergence of megacities (cities with population greater than 10 million). Such large population concentration in cities is a significant historic change. The number of megacities has risen from two in 1950 to twenty in 2005 in the world. Moreover, 17 out of the 20 megacities in the world are located in the world's less developed regions. Ancient Megalopolis, built by Epaminondas in 371–368 B.C., was the capital of the Arcadian alliance in Greece. It was considered to be the model of a prosperous, happy and peaceful city. Most current megacities (that share the same "name" with the ancient city) but also metropolitan cities (cities up to 5 million) do not experience a similar quality of life, since global population growth is becoming an urban phenomenon mainly in the less developed regions. It is ironic that much of what were once considered the major advantages of life in the city, like security, better housing conditions, and services provision have now become major disadvantages of urban life, like criminality, slums and lack of services, (Avrahami , Raizman, Doytsher, 2008).

Urbanization is a population shift from rural to urban areas, "the gradual increase in the proportion of people living in urban areas", and the ways in which each society adapts to the change (Browser, 2014). It is predominantly the process by which towns and cities are formed and become larger as more people begin living and working in central areas. The United Nations projected that half of the world's population would live in urban areas at the end of 2008. It is predicted that by 2050 about 64% of the developing world and 86% of the developed world will be urbanized. That is equivalent to approximately 3 billion urbanites by 2050, much of which will occur in Africa and Asia. Notably, the United Nations has also

recently projected that nearly all global population growth from 2015 to 2030 will be absorbed by cities, about 1.1 new urbanites over the next 15 years (The Economist, 2013).

Sietchiping, (2003) stated that urbanization in Africa has been phenomenal and puzzling with a rapid shift from 15% in 1950 to about 41% currently. It is estimated that by 2030, the continent may attain 54% urban proportion (United Nations Population Fund, 2007). Not only are there more people living in cities but the cities themselves are becoming larger and more numerous. There are now 43 cities in Africa with populations of more than one billion inhabitants, a figure that is expected to rise to almost 70% by 2015. This phenomenal growth has been qualified variously as “galloping” and “wild“ to express not only the uncontrolled nature of urban growth, but also the ecological and sanitary consequences often associated with the growth and the implications they may have on human health and well-being.

Urbanization is increasing in both the developing countries. However, rapid urbanization, particularly the growth of large cities, and the associated problems of unemployment, poverty, inadequate health facilities, poor sanitation, growth of urban slums and environmental degradation pose a formidable challenge in many developing countries. Available statistics shows that more than half of the world’s 6.6 billion people live in urban areas, crowded into 3 percent of the earth land area (Angotti, 1993; UNFPA, 1993). The proportion of the world population living in urban areas, which was less than 5 percent by 1800 increased to 47 percent in 2000 and is expected to reach 65 percent in 2030 (United nations, 1990; 1991). However more than 90 percent of future growth will be concentrated in cities in developing countries and a large percentage of this population will be poor. In Africa and Asia where urbanization is still considerably lower (40 percent), both are expected to be 54 percent urban by 2025 (UN 1995; 2002).

Urbanization is the process by which large number of people become permanently concentrated in relatively small areas forming cities. People move from rural to urban and in this process the number of people in urban increases when compared with the number of people living in rural areas (Robert, 2007).

Urbanization is a major change taking place globally. The urban global tipping point was reached in 2007 when for the first time in history over half of the world's populations (3.3 billion people) were living in urban areas (Altan2009). It is estimated that a further 500 million people will be urbanized in the next five years and projections indicated that 60% of the world's population will be urbanized by 2030. The rush to the cities, partly by the attraction of opportunities for wealth generation and economic development, has created the phenomenon of 'mega cities' (urban areas with a population of 10 million or more). There are currently 19 megacities in the world and are expected to be 27 by 2020. (Abdulharis, Van Loenen & Zevenbergen, 2005).

According to Albites (2008) over half of population growth will be in Asia where the world's economic geography is now shifting. This incredible rapid growth of megacities causes severe ecological, economical and social problems. It is increasingly difficult to manage this growth in a sustainable way. It is recognized that over 70% of population growth currently is taking place outside the formal planning process and that 30% of urban populations in developing countries are living in slums or informal settlements, that is, where vacant state-owned or private land is occupied illegally and is used for illegal housing system. In sub-Saharan Africa, 90% of new urban settlements are taking the form of slums. These are especially vulnerable to climate change impacts as they are usually built on hazardous sites in high-risk locations. Even in developed countries unplanned or informal urban development is a major issue (Habib, 2009)

Commercial activities are indicators to urbanization and serve as source of sustaining it. People engage in different forms of commercial activities ranging from trade, to industrial production. This provides people with means of earning living and living a comfortable life. However, commercial activities have their negative effects on the environmental health due to toxics from industries. Also a lot of smokes are emitted into the atmosphere due to commercial activities which was found to have serious negative impacts on the environmental health.

Construction is seen all over urban areas. Government constructing roads, bridges, underground passages, schools, markets, hospitals, as well as individuals building houses, industries, shops, and so on In doing this, demolition and burning take place, leading to introduction of harmful substances into the environment thereby affecting environmental health.

Overcrowding may have a detrimental effect on health. Studies indicate that overcrowding is associated with increases in blood pressure (D'atri, 1995; Evans, 1999) and increased secretion of stress hormones in the short term, at least. In the longer term, the picture is not as clear. Fuller et al (1993) identify two reasons why crowded conditions may be detrimental to health: first, the stress associated with crowding may depress the immune system and have other direct health effects; second, overcrowded conditions may facilitate the spread of communicable diseases. A number of studies indicate that crowded conditions (measured in terms on the number of people per household) are associated with increased incidence of colds, asthma, influenza and diarrhoea, particularly in young children (Kearns et al, 1992; Causon-Kaas et al, 1997).

Urban transportation problems remain one of the most nagging problems in urban health today. All over the world, attempts have been made to tackle the problems, yet the situation seems to get worse. Cities are centers of economic, social, cultural and intellectual

activities. These activities result in the drift of the population from rural to urban centers and these congregations have caused cities to expand without control in many areas, causing congestion, environmental and social problems.

In Nigeria, many scholars have also carried out studies on urban transport problems all aimed at proffering solutions, many of the scholars who worked on urban transport problems in Nigeria have identified congestion as the most serious. Aderamo (1998).

The environmental impact of transport is significant because it is a major user of energy, and burns most of the world's petroleum. This creates air pollution, including nitrous oxides and particulates, and is a significant contributor to global warming through emission of carbon dioxide, for which transport is the fastest-growing emission sector. By subsector, road transport is the largest contributor to global warming.

It is against this background that this study investigated the perceive urbanization factors on environmental health in Kano metropolis.

1.2 Statement of Problem

The continuing urbanization of the developed and developing nations of the world has brought about changes in the social life of people. Nigeria as one of the developing countries in Africa is characterized with the growth of industries and inflow of people from various countries of the world. Kano an urban city in north-western Nigeria is an economic setting that experiencing rapid changes in social, industrial and economic aspects. It is evident today that there is continuing inflow of people from within and outside the country into Kano city for commercial purpose, there is ever increasing number of automobiles for transports purpose, growth of industries both large and small scale that attracted more people into the city for job opportunities and licence over population.

Urbanization is viewed from the positive angle as development and upliftment of the society and all efforts are put in ushering it. As a result, government and private individuals

engage deeply in commercial activities, wide construction works, commercial transportation with a view to give the environment an urban view. This in turn pulls a great number of people to the urban areas thereby making the cities overcrowded. However, rapid and often unplanned urban growth is often associated with poverty, environmental degradation and population demands that outstrip service capacity. These conditions place human health at risk. Such as cholera outbreak which could affect large number of people thereby adding more burden on government little budget, spread of other communicable diseases, noise pollution from motorcycles, grinding machines and too many people.

The emission from automobiles and other industrial activities and the waste from economic and social activities have created an environment that pose danger to the health of the inhabitants. Health implication such as air, water and noise pollution, other depletion, climatic change and over population are on the increase in the urban city of Kano. It seems that the major cause of most environmental health problems in Kano metropolis is the rapid growth of human population. It has been estimated that most of the population growth takes place in urban areas of the metropolitan which means people from rural areas migrates to urban areas and puts more pressure to the urban settlement which leads to many environmental health problems in Kano metropolis which include increasing growth of urban slums causing overcrowding in squalid housing conditions, poor quality and unavailability of basic infrastructures and social services, unorganized and poorly controlled transport system, rampant and unorganized markets for commercial activities, dirt and filthy environment due to unclean conditions among others.

This study is therefore carried out in order to identify urbanization factors responsible for environmental health problems among residents of Kano metropolis.

To facilitate this, the researcher answers the following questions;

1. Are commercial activities factors of environmental health problems in Kano metropolis?
2. Are construction works factor of environmental health problems in Kano metropolis?
3. Is overcrowding a factor of environmental health problems in Kano metropolis?
4. Is transportation a factor of environmental health problems in Kano metropolis?

1.3 Hypothesis

Major Hypothesis

Urbanization is not a significant factor on environmental health problems in Kano metropolis

Sub- Hypothesis

1. Industrial commercial activities are significant factors to environmental health problems in Kano metropolis.

2. Roads and building Construction are significant factor to environmental health problems in Kano metropolis.

3. Overcrowding is a significant factor to environmental health problems in Kano metropolis.

4. Transportation is a significant factor to environmental health problems in Kano metropolis.

1.4 Purpose of the Study

The main purpose of the study is to investigate the perceived Urbanization factors and environmental health problems in Kano metropolis, with a view to identify among others urban factors that causes environmental health problems in Kano metropolis.

1.5. Significance of the Study

This research work will be of vital importance to many individuals and organizations either directly or indirectly;

The residents of Kano metropolis, the Local Government Primary Health Care department, self help groups and agencies like NESREA and other people charged with the responsibility of promoting public health will benefit through organizing awareness campaigns, seminars and re-sensitization workshops, making reference to the available data gathered while carrying out the study.

The findings of the study would also provide the basis for sound sanitary practices that would help in shaping the attitude and practice of the people positively towards environmental health problems.

1.6 Delimitation of the study

This study was delimited to urban factors that lead to environmental health problems among residents of five (5) metropolitan local governments area of Kano state, which are Dala, Fagge, Nasarawa, Municipal, and Ungogo It is only delimited to residents aged between 20 years and above compromising male and female. The study is also delimited to commercial activities, construction works, overcrowding and transportation.

1.7 Operational Definition of terms

Urbanization: the process by which large numbers of people become permanently concentrated forming cities.

Environmental health: those aspects of human health, including quality of life, that are determined by physical, biological, social and psychosocial factors in the environment.

Environmental health problems: Changes in our habitant resulting from interactions which bring health consequences

Perceived urbanization factors: these include commercial activities, construction, transportation and overcrowding.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

This study will attempt to find out the urbanization factors of environmental health problems in Kano metropolis, to achieve the purpose; literature related to the topic is described under the following heading:

- Theoretical framework
- Concept of urbanization
- Concept of environmental health
- Urbanization factors and environmental health problems
- Summary and uniqueness of the study

2.1 Theoretical Framework

Theoretical framework is believed to be a way or mode of seeing, analyzing, interpreting, describing and predicting issues under investigation (Obasi, 2008:43). That is why it is absurd to discuss and analyze concepts or any line of action particularly in the Social Sciences without linking them to some theoretical viewpoints. Stressing more on the importance of theoretical framework in any study, Chukwuemeka (2002:60), stated that it provides the significance, rational and justification for the study. It is in view of the above contributions that the central place theory and modernization theory were adopted for this study.

2.1.1 Central Place Theory

Central place theory is a geographical theory that seeks to explain the number, size and location of human settlements in an urban system. The theory was created by the German

geographer Walter Christaller, who asserted that settlements simply functioned as 'central places' providing services to surrounding areas. The Central Place Theory made the following simplifying assumptions:

All areas have

- an unbounded isotropic (all flat), homogeneous, limitless surface (abstract space)
- an evenly distributed population
- all settlements are equidistant and exist in a triangular lattice pattern
- evenly distributed resources
- distance decay mechanism
- perfect competition and all sellers are economic people maximizing their profits
- consumers are of the same income level and same shopping behaviour
- all consumers have a similar purchasing power and demand for goods and services
- Consumers visit the nearest central places that provide the function which they demand. They minimize the distance to be travelled
- no provider of goods or services is able to earn excess profit (each supplier has a monopoly over a hinterland). Therefore the trade areas of these central places who provide a particular good or service must all be of equal size
- there is only one type of transport and this would be equally easy in all directions
- transport cost is proportional to distance traveled in example, the longer the distance traveled, the higher the transport cost

The theory then relied on two concepts: threshold and range.

- Threshold is the minimum market (population or income) needed to bring about the selling of a particular good or service.

- Range is the maximum distance consumers are prepared to travel to acquire goods - at some point the cost or inconvenience will outweigh the need for the good.

The result of these consumer preferences is that a system of centers of various sizes will emerge. Each center will supply particular types of goods forming levels of hierarchy. In the functional hierarchies, generalizations can be made regarding the spacing, size and function of settlements.

1. The larger the settlements are in size, the fewer in number they will be, that is, there are many small villages, but few large cities.
2. The larger the settlements grow in size, the greater the distance between them, that is, villages are usually found close together, while cities are spaced much further apart.
3. As a settlement increases in size, the range and number of its functions will increase .
4. As a settlement increases in size, the number of higher-order services will also increase, that is, a greater degree of specialization occurs in the services.

The higher the order of the goods and services (more durable, valuable and variable), the larger the range of the goods and services, the longer the distance people are willing to travel to acquire them.

At the base of the hierarchy pyramid are shopping centres, newsagents and so on which sell low order goods. These centres are small. At the top of the pyramid are centres selling high order goods. These centres are large. Examples for low order goods and services are: newspaper stalls, groceries, bakeries and post offices. Examples for high order goods and services are: jewellery, large shopping arcades and malls. They are supported by a much larger threshold population and demand.

2.1.2 Modernization Theory

Modernization theory is a description and explanation of the processes of transformation from traditional or underdeveloped societies to modern societies. In the words of one of the major proponents, "Historically, modernization is the process of change towards those types of social, economic, and political systems that have developed in Western Europe and North America from the seventeenth century to the nineteenth and have then spread to other European countries and in the nineteenth and twentieth centuries to the South American, Asian, and African continents" (Eisenstadt 1966, p. 1). Modernization theory has been one of the major perspectives in the sociology of national development and underdevelopment since the 1950s. Primary attention has focused on ways in which past and present premodern societies become modern (that is,, Westernized) through processes of economic growth and change in social, political, and cultural structures.

In general, modernization theorists are concerned with economic growth within societies as indicated, for example, by measures of gross national product. Mechanization or industrialization are ingredients in the process of economic growth. Modernization theorists study the social, political, and cultural consequences of economic growth and the conditions that are important for industrialization and economic growth to occur. Indeed, a degree of circularity often characterizes discussions of social and economic change involved in modernization processes because of the notion, embedded in most modernization theories, of the functional compatibility of component parts. The theoretical assumptions of modernization theories will be elaborated later.

2.2 Concept of Urbanization

Urbanization is the process by which large numbers of people become permanently concentrated in relatively small areas, forming cities. Internal rural to urban migration means

that people move from rural areas to urban areas. In this process the number of people living in cities increases compared with the number of people living in rural areas. Natural increase of urbanization can occur if the natural population growth in the cities is higher than in the rural areas. This scenario, however, rarely occurs. A country is considered to urbanized when over 50 per cent of its population live in the urban areas (Long 1998).

An urban area is spatial concentration of people who are working in non-agricultural activities. The essential characteristic here is that urban means non-agricultural. Urban can also be defined as a fairly complex concept. Criteria used to define urban can include population size, space, density, and economic organization. Usually, however, urban is simply defined by some base line size, like 20 000 people. Anyway this definition varies between regions and cities (Long 1998).

Urbanization refers to general increase in population and the amount of industrialization of a settlement. It includes increase in the number and extent of cities. It symbolizes the movement of people from rural to urban areas. Urbanization happens because of the increase in the extent and density of urban areas.

The united nation population division (2006) defines urbanization as a major change taking place globally. The urban global tipping point was reached in 2007 when for the first time in history over half of the world's population 3.3bilation people where leaving in urban areas. It is estimated that a further 500 million people will be urbanized in the next five years and projection indicate that 60% of the world's population will be urbanized by 2030.

Urbanization is relevant to a range of disciplines, including geography, sociology, economics, urban planning, and public health. The phenomenon has been closely linked to modernization, industrialization, and the sociological process of rationalization. Urbanization can be seen as a specific condition at a set time (for example, the proportion of total

population or area in cities or towns) or as an increase in that condition over time. So urbanization can be quantified either in terms of, say, the level of urban development relative to the overall population, or as the rate at which the urban proportion of the population is increasing. Urbanization creates enormous social, economic and environmental changes, which provide an opportunity for sustainability with the "potential to use resources more efficiently, to create more sustainable land use and to protect the biodiversity of natural ecosystems" (http://www.unfpa.org/urbanization).

Urbanization is not merely a modern phenomenon, but a rapid and historic transformation of human social roots on a global scale, whereby predominantly rural culture is being rapidly replaced by predominantly urban culture. The first major change in settlement patterns was the accumulation of hunter-gatherers into villages many thousand years ago. Village culture is characterized by common bloodlines, intimate relationships, and communal behavior whereas urban culture is characterized by distant bloodlines, unfamiliar relations, and competitive behavior. This unprecedented movement of people is forecast to continue and intensify during the next few decades, mushrooming cities to sizes unthinkable only a century ago. Today, in Asia the urban agglomerations of Osaka, Karachi, Jakarta, Mumbai, Shanghai, Manila, Seoul, and Beijing are each already home to over 20 million people, while the Pearl River Delta, Delhi and Tokyo are forecast to approach or exceed 40 million people each within the coming decade. Outside Asia, Mexico City, Sao Paulo, New York City, Lagos, Los Angeles, and Cairo are fast approaching being, or are already, home to over 20 million people (http://www.unfpa.org/urbanization).

As more and more people leave villages and farms to live in cities, urban growth results. The rapid growth of cities like Chicago in the late 19th century, Tokyo in the mid twentieth, and Delhi in the 21st century can be attributed largely to rural-urban migration. This kind of growth is especially commonplace in developing countries. This phenomenal

growth can also be attributed to the lure of not just economic opportunities, but also to loss or degradation of farmland and pastureland due to development, pollution, land grabs, or conflict, the attraction and anonymity of hedonistic pleasures of urban areas, proximity and ease of mass transport, as well as the opportunity to assert individualism.

Urban centres are seen by many as an opportunity to “escape traditional patriarchy and experience new freedoms,” this includes greater access to education, health, and employment. However, for many who seek these opportunities the opposite occurs resulting in “extreme poverty, exclusion, vulnerability and marginalization due to urban sprawl where “urban land is expanding much faster than the urban population.” As such a strain on urban efficiencies occurs resulting in the urban poor who are forced to create slums and then ultimately face unhealthy living conditions without access to the very opportunities they sought in the first place. The United Nations Population Fund (UNFPA) estimated that residents in slums had risen to approximately 863 million in 2012 from over 650 million in 1990 (Barney, 2015).

The rapid urbanization of the world’s population over the twentieth century is described in the 2005 Revision of the UN World Urbanization Prospects report. The global proportion of urban population rose dramatically from 13% (220 million) in 1900, to 29% (732 million) in 1950, to 49% (3.2 billion) in 2005. The same report projected that the figure is likely to rise to 60% (4.9 billion) by 2030 (U.N, 2005).

According to the UNFPA (2007) State of the World Population 2007 report, in the middle of 2007, the majority of people worldwide was living in towns or cities, for the first time in history; this is referred to as the arrival of the "Urban Millennium" or the 'tipping point'. In regard to future trends, it is estimated 93% of urban growth will occur in developing nations, with 80% of urban growth occurring in Asia and Africa.

Urbanization rates vary between countries. The United States and United Kingdom have a far higher urbanization level than India, Swaziland or Niger, but a far slower annual urbanization rate, since much less of the population is living in a rural area. Some nations make a distinction between suburban and urban areas, while others do not; indeed, human conditions within such areas differ greatly (Ankerl, 2008).

Different forms of urbanization can be classified depending on the style of architecture and planning methods as well as historic growth of areas. In cities of the developed world urbanization traditionally exhibited a concentration of human activities and settlements around the downtown area, the so-called in-migration. In-migration refers to migration from former colonies and similar places. The fact that many immigrants settle in impoverished city centres led to the notion of the "peripheralization of the core", which simply describes that people who used to be at the periphery of the former empires now live right in the centre. Recent developments, such as inner-city redevelopment schemes, mean that new arrivals in cities no longer necessarily settle in the centre. In some developed regions, the reverse effect, originally called counter urbanization has occurred, with cities losing population to rural areas, and is particularly common for richer families. This has been possible because of improved communications, and has been caused by factors such as the fear of crime and poor urban environments. It has contributed to the phenomenon of shrinking cities experienced by some parts of the industrialized world (Ankerl, 2008).

When the residential area shifts outward, this is called suburbanization. A number of researchers and writers suggest that suburbanization has gone so far to form new points of concentration outside the downtown both in developed and developing countries such as India. This networked, poly-centric form of concentration is considered by some emerging pattern of urbanization. It is called variously exurbia, edge city (Garreau, 1991), network city (Batten, 1995), or postmodern city (Dear, 2000). Los Angeles is the best-known example of

this type of urbanization. Interestingly, in the United States, this process has reversed as of 2011, with "re-urbanization" occurring as suburban flight due to chronically high transport costs (Bora, 2012).

Rural migrants are attracted by the possibilities that cities can offer, but often settle in shanty towns and experience extreme poverty. The inability of countries to provide adequate housing for these rural migrants is related to overurbanization, a phenomenon in which the rate of urbanization grows more rapidly that the rate of economic development, leading to high unemployment and high demand for resources. In the 1980s, this was attempted to be tackled with the urban bias theory which was promoted by Michael Lipton (Bora, 2012).

Urbanization can be planned urbanization or organic. Planned urbanization, that is,: planned community or the garden city movement, is based on an advance plan, which can be prepared for military, aesthetic, economic or urban design reasons. Examples can be seen in many ancient cities; although with exploration came the collision of nations, which meant that many invaded cities took on the desired planned characteristics of their occupiers. Many ancient organic cities experienced redevelopment for military and economic purposes, new roads carved through the cities, and new parcels of land were cordoned off serving various planned purposes giving cities distinctive geometric designs. UN agencies prefer to see urban infrastructure installed before urbanization occurs. Landscape planners are responsible for landscape infrastructure (public parks, sustainable urban drainage systems, greenways etc.) which can be planned before urbanization takes place, or afterward to revitalize an area and create greater livability within a region. Concepts of control of the urban expansion are considered in the American Institute of Planners (Bora, 2012).

As the population continues to grow and urbanize at unprecedented rates, new urbanism and smart growth techniques will create a successful transition into developing environmentally, economically, and socially sustainable cities. Smart Growth and New

Urbanism's principles include walkability, mixed-use development, comfortable high-density design, land conservation, social equity, and economic diversity. Mixed-use communities work to fight gentrification with affordable housing to promote social equity, decrease automobile dependency to lower use of fossil fuels, and promote a localized economy. Walkable communities have a 38% higher average GDP per capita than less walkable urban metros (Leinberger, Lynch). By combining economic, environmental, and social sustainability, cities will become equitable, resilient, and more appealing than urban sprawl that overuses land, promotes automobile use, and segregates the population economically (Bora, 2012).

2.2.1 Causes of Urbanization

Urbanization occurs as individual, commercial flight, social and governmental efforts reduce time and expense in commuting and transportation and improve opportunities for jobs, education, housing, and transportation. Living in cities permits the advantages of the opportunities of proximity, diversity, and marketplace competition. However, the advantages of urbanization are weighed against alienation issues, stress, increased daily life costs, and negative social aspects that result from mass marginalization. Suburbanization, which is happening in the cities of the largest developing countries, was sold and seen as an attempt to balance these negative aspects of urban life while still allowing access to the large extent of shared resources.

Cities are known to be places where money, services, wealth and opportunities are centralized. Many rural inhabitants come to the city for reasons of seeking fortunes and social mobility. Businesses, which provide jobs and exchange capital are more concentrated in urban areas. Whether the source is trade or tourism, it is also through the ports or banking systems that foreign money flows into a country, commonly located in cities.

Economic opportunities are just one reason people move into cities, though they do not go to fully explain why urbanization rates have exploded only recently in places like China and India. Rural flight is a contributing factor to urbanization. In rural areas, often on small family farms or collective farms in villages, it has traditionally been difficult to access manufactured goods, though overall quality of life is very subjective, and may certainly surpass that of the city. Farm living has always been susceptible to unpredictable environmental conditions, and in times of drought, flood or pestilence, survival may become extremely problematic.

Particularly in the developing world, conflict over land rights due to the effects of globalization has led to less politically powerful groups, such as farmers, losing or forfeiting their land, resulting in obligatory migration into cities. In China, where land acquisition measures are forceful, there has been far more extensive and rapid urbanization (54%) than in Nigeria (26%), where peasants form militant groups (for example, Naxalites) to oppose such efforts. Obligatory and unplanned migration often results in rapid growth of slums. This is also similar to areas of violent conflict, where people are driven off their land due to violence. Bogota, Colombia is one example of this (Arikya, 2013).

Cities offer a larger variety of services, such as specialist services that aren't found in rural areas. Supporting the provision of these services requires workers, resulting in more numerous and varied job opportunities. Elderly individuals may be forced to move to cities where there are doctors and hospitals that can cater for their health needs. Varied and high quality educational opportunities are another factor in urban migration, as well as the opportunity to join, develop, and seek out social communities.

Urbanization also creates greater opportunities for women that are otherwise denied to them living in rural areas. This creates a gender-related transformation where women are engaged in paid employment and have access to education resulting in demographic

implications in which fertility levels decline. However, women are still at a disadvantage due to their unequal position in the labour market, their inability to secure assets independently from male relatives and exposure to violence (UNFPA, 2012).

People located in cities are more productive than those working outside dense agglomerations. An important question for the policy makers as well as for clustering people deals with the causality of this relationship that is whether people become more productive in cities due to certain agglomeration effects or are cities simply attracting those who are more productive. Economists have recently shown that there exists indeed a large productivity gain due to locating in dense agglomerations. It is thus possible that agents locate in cities in order to benefit from these agglomeration effects (UNFPA, 2012).

The concentration of wealth prestige, political power and religious learning in the cities attracted large numbers of migrants, both from the neighboring countryside and from distant regions. This influx occasioned the building of additional section of the city to accommodate these strangers in many of the northern cities these areas were separated between sections for the distant, often non Muslim migrants not subject to the religious and other prohibitions of the emir, and for these who came from the local region and were subjects of the emir. The former area was designated the “Sabon Gari,” or new town (which in southern cities, such as Ibadan has often been shortened to “sabo”), while the latter was often known as “tudun wada,” an area often quite wealthy and elaborately laid out. To the pre-colonial sections of the town was often added a government area for expatriate administrators. The result was that many of the northern cities have grown from single centralized core to being polynucleotide cities, with areas whose distinctive character reflected their origins, and –the roles and position of their inhabitant.

Surrounding many of the large, older northern cities, Kano, Sokoto, and Katsina there developed regions of relatively dense rural settlement where increasingly intensive.

Agriculture was practiced to supply food and other products to the urban population. These areas have come to be known as closed settled zones, and they were of major impotence to the agricultural economies of the north. By 1990 the inner close settled zone around Kano, and the largest of cites of its kind extended to a radius of about thirty kilometers, essentially the limit of a day trip to the city on foot or by donkey. Within inner zone, there has long been a tradition of intensive interaction between the rural and urban population, involving not just food but also wood for fuel, manure, and a range of trade goods. There has also been much land investment and speculations in this zone. The full range of Kano's outer close settled zone in 1990 was considered to extend sixty-five (65) to ninety-five (95) kilometers from the city, and the rural unban interactions had extended in distance and increased in intensity because of the great improvements in roads and in availability of motorized transport. Within this zone, the great majority of usable land was under annual rainy season or continuous irrigated cultivation, making it one of the most intensively cultivated regions in sub- Saharan African.

Kano as a city had growing manufacturing sector, including, for example, textile mills, steel plants, car assembly plants, large construction companies, trading corporations, and financial institution. They also included government services centers, large offices and apartment complexes, along with a great variety of small business enterprises, many in the "informal sector", and vast slums areas. All postsecondary education installations were in the city and the vast majority of salaried jobs remained in the city rather than in the rural area.

2.2.2 Benefits of Urbanization

Though urbanization has drawbacks, it has its benefits.

Efficiency - Cities are extremely efficient. Less effort is needed to supply basic amenities such as fresh water and electricity. Research and recycling programs are possible only in

cities. In most cities flats are in vogue today. Many people can be accommodated within a small land area.

Convenience - Access to education, health, social services and cultural activities is readily available to people in cities than in villages. Life in cities is much more advanced, sophisticated and comfortable, compared to life in villages. Cities have advanced communication and transport networks.

Concentration of resources - Since major human settlements were established near natural resources from ancient times, a lot of resources are available in and around cities. A lot of facilities to exploit these resources also exist only in cities.

Educational facilities - Schools, colleges and universities are established in cities to develop human resources. A variety of educational courses and fields are available offering students a wide choice for their future careers.

Social integration - People of many castes and religions live and work together in cities, which creates better understanding and harmony and helps breakdown social and cultural barriers.

Improvements in economy - High-tech industries earn valuable foreign exchange and lot of money for a country in the stock markets.

2.2.3 Adverse effects of Urbanization

There is increasing competition for facilities due to the high standard of living in urban areas, which has triggered several negative effects. Many people including farmers who move to cities in search of a better life end up as casual laborers as they lack adequate education. This leads to one of the worst problems of urbanization - the growth of slums.

Slums

They are urban areas that are heavily populated with substandard housing and very poor living conditions. As a result several problems arise.

Land insecurity - Slums are usually located on land, which are not owned by the slum dwellers. They can be evicted at any time by the landowners.

Poor living conditions - Crowding and lack of sanitation are main problems. This contributes to outbreak of diseases. Utilities such as water, electricity and sewage disposal are also scarce.

Unemployment - Since the number of people competing for jobs is more than jobs available, unemployment is an inevitable problem.

Crime - Slum conditions make maintenance of law and order difficult. Patrolling of slums is not a priority of law enforcing officers. Unemployment and poverty force people into anti-social activities. Slums become a breeding ground for criminal activities.

2.3 Concept of Environmental Health

The word Environment simply means ones surrounding or external condition affecting the growth, existence and welfare of an organism (Anthony, 2006). Davis (1999) conceptualized Environment as the areas surrounding one's residence. He then divided residential surrounding as internal and external. The internal environment is seen as the sleeping rooms, kitchen, toilets, stores, where as the external environment means the plain ground surface on which the house was built. It is also defined as all that which is external to individual human host. It can be divided into physical, biological, social cultural any or all of which can influence health status in populations.' (WHO, 1995)

According to Aibor and Olarunda (2007), Environment has been considered to include both the biological, physical and social surrounding of individuals. They further explained that the biological environment is that which comprises the plants, animals and the microorganisms, while the physical environment includes heat, air, water and chemical agents of all kinds or sources. The social environment however, is considered as the overall

economic and practical organization in the society and of the institution by which individuals are integrated into the society at various stages in their lives.

Ordinioha (2006) postulated that the physical environment is known to have far reaching consequences for health. He explained that, untreated water, careless disposal of solid wastes including human wastes and overcrowding poses various health problems to people and animals, adding that, any society with these type of environment are said to be living in an unhygienic or in sanitary condition which could definitely expose them to various health hazards.

The WHO expert committee on environmental health (2005), defined environmental health as the control of all factors in man's physical environment which exercise or may exercise deleterious effect on his physical development, health and survival.

It can be generally understood here that, it is very essential to ensure an environment is kept in a good sanitary condition so as to avoid filth and other disease causing organisms from multiplying and spreading within the environment.

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Health is only possible where resources are available to meet human needs and where the living and working environment is protected from life-threatening and health threatening pollutants, pathogens and physical hazards (WHO, 1995).

Environmental health has been defined in a 1999 document by the World Health Organization (WHO) as:

Those aspects of the human health and disease that are determined by factors in the environment. It also refers to the theory and practice of assessing and controlling factors in the environment that can potentially and affect health.

Environmental health as used by the WHO Regional Office for Europe, includes both the direct pathological effects of chemicals, radiation and some biological agents, and the effects (often indirect) on health and well being of the broad physical, psychological, social and cultural environment, which includes housing, urban development, land use and transport.

As of 2015 the WHO website on environmental health states "Environmental health addresses all the physical, chemical, and biological factors external to a person, and all the related factors impacting behaviours. It encompasses the assessment and control of those environmental factors that can potentially affect health. It is targeted towards preventing disease and creating health-supportive environments. This definition excludes behaviour not related to environment, as well as behaviour related to the social and cultural environment, as well as genetics."

The WHO has also defined environmental health services as "those services which implement environmental health policies through monitoring and control activities. They also carry out that role by promoting the improvement of environmental parameters and by encouraging the use of environmentally friendly and healthy technologies and behaviors. They also have a leading role in developing and suggesting new policy areas."

2.3.1 Components of Environmental health

In Nigeria today, filthy environment and its relationship to health is often the source of epidemics in some cities and towns resulting to high mortality and morbidity rate; in which Kano metropolis is not an exception to this assertion. (Fawole, Sadik and Basheer, 2006).

According to a study conducted in Zaria Metropolitan by Oluwande (2004), poor environmental sanitation and personal hygiene have contributed to the outbreak of typhoid fever and cholera epidemics in Zaria Metropolitan. He expressed that one way of protecting

the public from diseases and ill-health is that which has to do with ensuring the safety of the environment through sanitation.

Lucas & Gilles (2006). Opined that in our cities and villages, sanitation facilities are either insufficient or not available completely. People should understand that the physical environment and physical condition of a community is an index of health consciousness and community progress in health, academic and socio-economic activities.

Obinioha (2006) maintained that poor environmental health and lack of sufficient knowledge about hygiene and safety are some of the important factors responsible for meningitis, malaria and tuberculosis. He affirmed that this situation, if not prevented, often results to contamination of water by wastes bacteria, making it unsafe for consumption by the inhabitants. According to him, failure to address the issue of environmental sanitation has been attributed to various factors, prominent among them are; unhealthy socio-cultural practices, poor sanitation education and awareness, low literacy level, bad governance over the years, disregard for the rule of law, non- challant attitude of people and other forms of indiscipline.

In the schedules of the NESP (2005), the subject environmental sanitation deals with the following areas, specifically referred to as the essential components of environmental sanitation. These are:

i. Solid Waste Management;
ii. Excreta and Sewage Management;
iii. Food Sanitation;
iv. Market and Abattoir Sanitation;
v. Management of Drainage Systems;
vi. School health programmed

vii. Pest and Vector Control;

viii. Adequate Portable Water Supply;

ix. Control of Reared and Stray Animals;

x. Disposal of Dead (man and animals);

xi. Weed and Vegetation Control;

xii. Hygiene Education and Promotion.

Solid Waste Management

In most cities and urban centers, refuse heaps are left unattended, and where the local government authorities do the collection, it is often irregular and sporadic. The recycling of waste is very rare while methods of storage, collection, transportation, compaction and final disposal are very unsatisfactory. (Orbinioha, 2006). He added that 87% of Nigerians use disposal methods that are in sanitary and so encourage the breeding of rodents, mosquitoes and other pests of public health importance, with attendant disease outbreaks.

Excreta and Sewage Management

According to a report on Nigerian Demographic and Health Survey (NDHS) (2003), 34.1% of the rural households have no toilet facilities of any kind at all, and as a result make use of bushes and rivers. Open defecation and urination are common practices everywhere. These in sanitary methods of excreta and sewage management have tremendous adverse affects on the health of the public and the environment. The NDHS 2008 is more specific in depicting the number of people that do not have access to good toilet facilities by regions, education and income, these shows therefore the need for ensuring that there is awareness and campaign on environmental sanitation, so as to reduce the occurrence of infectious diseases (NDHS, 2003).

Food Sanitation

Records of the Federal Ministry of Health (FMOH, 2005) showed that the poor state of food sanitation in the country has been shown to play a significant role in the etiology of food borne diseases. Every year, about six hundred thousand (600,000) episodes of diarrhea occur in children under the age of five. Similarly, there have been increasing numbers of cases of food born diseases over the years. In 1994 for instance, there were 3,173; 12,716; and 22,525 cases of cholera, food poisoning and typhoid/paratyphoid fevers respectively. In 1998, the cases were 9,254; 32,411; and 68,846 respectively and by 2001, cholera and typhoid cases have further increased to 10,294 and 73,949 cases respectively.

Market and Abattoir Sanitation

According to a study conducted in Kano metropolitan by Jibo (2000), markets and abattoirs are built without proper layouts and where such layout exists, they have been distorted. Besides, transportation of animal meat from the abattoirs in passenger's vehicles or motorcycles is a common practice in most towns and cities. Contamination can occur due to these practices because the animal meat can be exposed to contaminants such as dust, flies and other pathogens in the environment, these practices shows that hygiene and sanitation is still low which can easily be associated with infectious diseases.

Management of Drainage Systems

A study on the attitude of people towards environmental health issues in Michika L.G.A of Adamawa state, conducted by Hamman, (2002), ascertained that public drains were used as substitutes for toilets and waste disposal facilities. This causes blockage of the drains and is usually responsible for environmental problems such as flooding, erosion and landslide, which destroy homes and causes major damages to public infrastructures and

private properties. In Kano, it is a known fact that there are major community based organizations, specialized in carrying out drainage cleaning; this is popular known as 'aikin Gayya'. Prominent among these CBOs are "sodangi in fagge local government, Yakasai Zumunta, Kura Zumunta association, all these and many others indulge in similar sanitary activities within their community. Despite these efforts in managing the drainage system, because of the large population size, managing the drainage system is becoming virtually impossible, as the people feel that it is the responsibility of government to manage the drainage system.

School health programmed

In another related study on the standard of schools sanitation in Enugu Metropolitan by Roche (2004), proposed that the standard of school sanitation is very poor. Most schools are overcrowded with dirty environment. Majority of public schools lack toilet facilities. In other instances, where sanitary facilities are provided, pupils sometimes vandalize them. Consequently, these factors have serious health implications.

Pest and Vector Control

According to the FMOH (2005), vector borne diseases, constitute major health problems in Nigeria. Malaria, a highly endemic vector borne disease, remains one of the five leading causes of morbidity and mortality among children and pregnant women. An estimated 50% of the 120 million populations experience at least one acute episode each year. Similarly, other pests such as venomous snakes, contribute to significant morbidity and mortality in the Niger-Benue valley of Nigeria. At the peak of farming and harvesting seasons, it is not uncommon to find beds in hospitals almost completely taken over by snake bite victims in these areas.

Adequate Portable Water Supply

Water is an essential ingredient for the sustenance of life. Water in poor quality and inadequate quantity; continue to pose a major threat to human health. Nowhere are the pressures felt as strongly as at the interface of water and human health, especially with indiscriminate dumping of sewage sludge into rivers and streams, non-treatment of effluents from industries and the paving of surfaces which prevent recharge of underground water. About 65% of the urban populations have access to safe sources of drinking water, while about 70% of the rural population depends mainly on unsafe sources such as open wells, rivers, streams, etc for drinking. Unwholesome water plays a significant role in the etiology of water borne disease such as cholera, typhoid and paratyphoid fevers. (NDHS, 2003).

From the words of Kofi Annan (2005), the former United Nations Secretary-General, "Access to safe water is a fundamental human need and a basic human right. Contaminated water jeopardizes both the physical and social health of all people. It is an affront to human dignity.

From the foregoing, it is evident that water sanitation as one of the essential components of environmental sanitation is an issue of great concern that should be given a due consideration for the betterment of the entire populace.

Control of Reared and Stray Animals

A variety of animals are raised in agricultural, domestic, commercial and other settings with little or no government regulations. In most rural areas, animals are common-place, where they stroll in and out of dwelling homes, resulting in an immense interaction between man and animals. In addition, most of the animals are reared in filthy, unhygienic conditions. Some of these animals are reservoirs of a number of zoonotic diseases such as

anthrax, brucellosis, rabies, leptosporosis, hydatid disease, bovine tuberculosis, among others. Consequently, there is no proper supervision of these animals; they room about littering the environment with their fecal matter and causing visual blight as well as being involved in massive destruction of farm produce (NESP, 2005).

Disposal of Dead Animals

According to the Lagos State Waste Management Authority (LAWMA) (2005), disposal of dead is a very important aspect of sanitation as it could be worrisome if not properly handled. In the city of Lagos, it is not uncommon to see animal's carcasses and remains of destitute and accident victims left unattended on the street for days and even weeks. These often decompose and create odor nuisances, encourage the spread of disease through vectors and other vermin and could also contaminate the underground water.

In view of the above, the burial of the dead in approved cemeteries should be encouraged, giving due respect to cultural and religious beliefs.

Weed and Vegetation Control

The Federal Ministry of Environment (FMOE) (2005) asserted that weeds usually grow in unattended places especially in the surroundings of homes, public places, vacant plots and major highways. Uncontrolled presence of weeds around homes provides harborage for dangerous reptiles which may be harmful to man. In these regard, a collective effort was suggested by the Federal Ministry of all the government bodies especially the federal ministry of works, agriculture, state and local government authorities as well as the community in general to regularly control the growth and spread of weeds for the betterment of the environment and well being.

Hygiene Education and Promotion

The NESP (2005) affirmed that hygiene education and promotion was well practiced in the past. But over the years, promotion of hygiene declined such that it is no longer given the attention it deserves. Positive behavioral and attitudinal changes are therefore the pillars on which sanitation practices can be built and the framework for this can only be achieved through sound hygiene education and promotion.

2.3.2 Environmental Health Problems

Environmental health problems are common in both urban and rural environments. Below is a list of some of the most common threats to environmental health.

- Dioxins
- Lead
- Mercury
- Air pollution
- Pesticides
- Environmental tobbaco smoke
- Drinking water contamination

Dioxins

Dioxins are a bioaccumulative toxin, meaning they are very slow to be processed and removed from the body, causing them to build up in the blood, fat, urine, breast milk, ovaries, and sperm. Since dioxins accumulate, even low levels of exposure can build up to create high levels in the body. Dioxins may be passed from parent to child across the placenta and through breast milk. Dioxins are formed during combustion processes such as trash incineration and manufacturing processes such as herbicide manufacture. Dioxin is a constituent of Agent Orange, a defoliant used extensively in Vietnam during the war.

Vietnam veterans show increased cancer rates, and children of veterans show increased rates of learning, attentional, emotional, and behavioral problems as well as growth hormone deficiency and allergic disorders.

Lead

Though banned from gasoline and paint, lead remains a significant risk to children. Lead affects virtually every system in the body and is particularly harmful to the developing brain and nervous system of fetuses and young children. Low levels of lead can decrease IQ, cause reading and learning disabilities, reduce attention span, and cause behavioral problems. These effects persist until adulthood and may be irreversible. For children, the primary sources of exposure are lead in old paint in homes, lead in dusts and soil from paint chips, leaded gasoline exhaust, industrial emissions, and lead in drinking water from pipes.

Mercury

Human exposure to Mercury has devastating health effects. Fetuses and nursing infants are especially susceptible as the mercury (in its organic form methylmercury) is passed from mother to child. Health effects include impaired memory, mental retardation, and reflex and visual abnormalities. The largest anthropogenic source of mercury is coal-fired electric power plants. The coal combustion process releases large amounts of mercury into the atmosphere through smokestacks. This mercury then falls in precipitation into the nation's lakes and rivers. Once in the water, bacteria can transform the mercury into the particularly dangerous organic form, methylmercury. Methylmercury is a fat-soluble molecule that can move through cell membranes and become attached to muscle tissue. Therefore, it is easily absorbed through fish gills and hence, gets into the food chain.

Air Pollution

Common air pollutants, such as ozone, particulate matter, nitrogen oxides, and sulfur dioxides are associated with increased respiratory illnesses and symptoms, aggravation of

asthma, and decreases in lung function in children. One recent study found an association between particulate air pollution and an increased risk of infant mortality. In 1995, about 18 million children under the age of ten lived in areas with air quality that did not meet federal standards. The major sources of air pollution include motor vehicles, stationary point sources - such as coal-burning power plants, refineries, industrial facilities, incinerators, and metal smelters - and consumer products. Parents can protect children by checking air pollution levels regularly where they live, limiting children's outdoor exercise when air pollution levels are high, and ensuring that the child's school is prepared for smog episodes.

Pesticides

Pesticides have been associated with the development of certain cancers in children, including leukemia, sarcomas, and brain tumors. Many classes of pesticides have been shown to adversely affect the developing nervous system of experimental animals. Parental exposure to pesticides has been linked with birth defects in children. New studies suggest that pesticides may compromise the immune system of infants and children. Children are exposed to pesticides at home, at school, in playgrounds and parks, in food and in water.

Environmental Tobacco Smoke

Environmental tobacco smoke (ETS) contains some 4,000 substances, more than 40 of which are known to cause cancer in humans or animals. Infants and young children whose parents smoke are at increased risk of lower respiratory tract infections such as pneumonia and bronchitis. ETS is responsible for an estimated 150,000 to 300,000 lower respiratory tract infections annually in children under 18 months of age, resulting in 7,500 to 15,000 hospitalizations each year. ETS also worsens asthma in between 200,000 to one million children each year. ETS has also been found to increase the risk of sudden infant death syndrome and induce asthma in children. Forty percent of children under the age of eleven live in homes with at least one smoker.

Drinking Water Contamination

Children are at particular risk from drinking water contaminants, not only because they consume two and a half times more water as a percentage of their body weight than adults but also because federal standards for pollutants are set based on anticipated effects on adults. Nigerians consume tap water containing microorganisms, trihalomethanes, arsenic, radon, lead, and pesticides. Bottled water is not necessarily of any better quality.

2.4 Urbanization Factors and Environmental Health Problems

Commercial activities, construction works, overcrowding and transportation are identified as factors of urbanization. These factors of urbanization have found to have effects on environmental health.

2.4.1 Commercial Activities and Environment Health Problems

Commercial activities are means by which people earn living. In every urban area, lots and lots of commercial activities are prevalent. These range from simple trading at home to industrial production on a large scale. Commercial activities result in many conditions that are unfavourable to environmental health leading to the spread of various contagious disease and causing a lot of death.

During commercial activities burning takes place, chemical emission takes place, sewages are produced, and so on all these have serious health implication to the environment. They result to air and water pollution which is detrimental to environmental health.

Mining, meat production, oil extraction and refining, pesticides production, leather production, are all aspects of commercial activities which have a lot of negative effects on environmental health.

2.4.2 Construction and Environmental Health Problems

Urbanization leads to construction works all over the environment. This is because new and new buildings are required in order to reach the state of urbanization which many communities aspire to attain. Construction work is one of the most important determinants of urbanization. It gives shape and face to urbanization worldwide. A community is said to be urbanized when skyscrapers, sophisticated road networks, communication network, electricity, bridges, underway passages, advanced hospitals, many and varied schools, and so on are available. In order for all these to be available construction must take place.

During construction works, demolition, burning, clearing, and so on take place which lead to air pollution with all its attending implication for environmental health. In Kano state for example many roads are scrapped and constructed. Sand is laid down which lead to dust being spread all over. People passing by have no alternative but to inhale this dust which in many instances lead to serious illness.

2.4.3 Overcrowding and Environmental Health Problems

Crowding may have a detrimental effect on health. Studies indicate that crowding is associated with increases in blood pressure (D'atri, 1975; Evans, 1979) and increased secretion of stress hormones (Lundbergh, 1976), in the short term, at least. In the longer term, the picture is not as clear. Fuller et al (1993) identify two reasons why crowded conditions may be detrimental to health: first, the stress associated with crowding may depress the immune system and have other direct health effects; second, overcrowded conditions may facilitate the spread of communicable diseases. A number of studies indicate that crowded conditions (measured in terms on the number of people per household) are associated with increased incidence of colds, asthma, influenza and diarrhoea, particularly in young children (Kearns et al, 1992; Causon-Kaas et al, 1997).

Elender et al (1998) studied risk factors for tuberculosis in England and Wales and found that rates were significantly higher in households with more than one person per room. However, the view that crowding *per se* is detrimental to health has been challenged on the basis that people living in overcrowded conditions may be affected by a range of other variables including the presence of damp and mould and poor access to and use of healthcare facilities (Gray, 2001). As is the case with chemical pollution and noise (see chapters 2 and 3) it is practically impossible to separate out the relative contributions of different environmental variables to illness, so whilst it can be shown that ill-health is *associated* with crowded conditions, it is impossible to conclude that crowding is, in itself, detrimental to health (Gray, 2001).

Several studies suggest that illnesses such as whooping cough, polio, diarrhoea, malaria, meningitis, acute lower respiratory infections (ALRI), influenza, hepatitis A, hepatitis B, helminth diseases, stunting, chronic diseases, and stress may be related to crowding (Bradley, et al. 1992:6). There is clearly a recognition of the need to improve human settlements with the purpose of improving health.

The united nations for human settlement has written that large cities in the least develop countries typically combine the traditional environmental health problems of poverty, particularly respiratory and enteric infections, with those of poor quality housing and unregulated industrialization. Resident therefore are often at risk from disease and injuries associated with poor sanitation, unsafe drinking water, dangerous roads, polluted air, indoor air pollution and toxic waste. The deterioration in the built environment is sharply in evidence throughout most of urban Africa.

According to Satterthwaite (2000) rapid urbanization is expanding the traditional role of cities as gateways for infections. Crowding and unsanitary conditions are important

amplifiers of the transmission diseases thrive where there is lack of water, and inadequate drainage, sanitation and solid waste removal. Population movement from rural areas into cities and greater mobility within cities are bringing new opportunities for otherwise marginal and obscure microbes

2.4.4 Transportation Environmental Health Problems

Nigeria is one of the countries in the developing world with rapid urbanization and fast growing cities. A study of the changing morphology of many Nigerian cities gives an insight into the evolution of urban transport problems in Nigeria. Most of the scholars who have worked on urban transport problems in Nigeria have identified congestion as the most serious. Congestion occurs when transport demand exceeds transport supply at a specific point in time and in a specific section of the transport systems. Under such circumstances each vehicle impairs the mobility of others. It is now a common feature of most urban centres of Nigeria and most especially Lagos, Kano, Ibadan, Port Harcourt, Enugu and others which are commercial and industrial nerve centres of the country, having the most problems (Aderamo, 1998).

The problem of traffic congestion in cities of Nigeria has its roots partly in the structural pattern of the roads especially in the traditional area of cities and the unplanned growth and haphazard land-use distribution. Associated with the traffic congestions are problems of parking. Parking demands far outweigh the available supply in most Nigerian cities. This results in road-side parking and illegal parking, which are common features in urban centres of Nigeria. The ineffective regulation on parking has further worsened the situation. Also, since vehicles spend the majority of the time parked which has created land consumption problems particularly in the Central Business Districts (CBDs). Unfortunately, the more parking facilities provided, the greater the demand for parking (Ogunbodede, 2004) since there is continuous increase in motorization.

Accidents frequently occur on roads in Nigerian urban centres. Urban environments are the most prone to motor traffic accidents because 75 per cent of traffic accidents take place in built-up areas or cities (Aderamo, 2002). This is due to the underlying factors of undue concentration of vehicles in urban areas, traffic mix and the resultant flow conflicts. Most of these accidents happen due to the general impatience and ill-tempered nature of road users and the conflict between pedestrians and the different means of road transport in the cities (Ogunsanya, 1993).

Environmental pollution and noise pollution have also been identified as one of the urban transport problems in Nigeria. This is as a result of discharge of effluents and emission from automobiles. Pollution, including noise generated by circulation is a serious impediment to the quality of life and even health of urban population. Further, energy consumption by urban transportation has increased and so the dependency on petroleum. The major pollutants include carbon monoxide, lead, nitrogen and hydro-carbons which are significant sources of eye and respiratory diseases. The increasing number of old and poorly maintained vehicles on Nigerian roads makes the pollution effect to be more serious. Land consumption is also a significant transportation requirement especially for the automobile. In addition to the transport routes, substantial requirements are also needed for car parking.

2.5 Effects of Environmental Health Problems

Environmental health issues serves to improve sanitation practices by reducing filth, sewage, refuse and other types of waste in the environment. Reduction in diarrhea diseases can be attained through better water supply and sanitation facilities.

WHO (2005), reported that in many countries all over the world, environmental sanitation has brought the control of malaria and other communicable diseases.

Based on these, it could be agreed that an environment which people live and prepare food could be dangerous to human health unless it is soundly constructed and made far away from waste. Diseases multiply and spread quickly among people living in an environment that sanitation practices does not exist.

A study conducted in Enugu Metropolitan by Roche J.P. (2004), confirmed that proper disposal and treatment of waste have reduced the report of increasing mental illness and other disease within the environment.

Christopher (2006) supported that the provision of adequate health facilities in our towns and villages will help in preserving the health and lives. Health, he further explained, and safe living in any society depends very much on how people manage their environment, because proper utilization of the environment brings about positive and effective healthy living.

According to Olarunda (2007), who is in support of Christopher (2006), maintained that the presence of refuse in our environment has the greatest effect on the entire health of the people living around. He added that the dangers of refuse and sewage accumulation around dwellings is that they serve as incubators of diseases vectors which contributes significantly to high mortality rate particularly among children.

It is therefore evident that effective implementation of environmental sanitation reduces significantly, if not eliminate certain diseases that prevails due to filthy environment.

Another study by Obinioha (2006), conducted in Lagos on solid waste management, ascertained that for a quality of life to be enhanced, adequate health facilities has to be provided and sanitation policies strengthened. Otherwise the accumulation of these wastes and refuse cause dangerous diseases because it will serve as an incubator for disease vectors.

Certainly, the relationship between disease and environment is more or less a symbiotic type of relationship, whereby each depends to a greater or lesser extent with the other. Efforts should be made to make an environment a disease and filth free for the betterment of health and well being of individuals and the society generally.

2.6 The Roles of People and Government in Environmental Health

Safety and cleanliness of the environment depends very much on the efforts of individuals and government which can be rendered through Aibor and Olarunda (2007), expressed that a pleasant environment or atmosphere must be provided by all citizens, through the provisions of facilities for environmental sanitation in order to reduce the incidence of diseases within the environment. All people are expected to participate fully in keeping their environment clean, free from disease vectors. They further explained that the removal of various wastes, garbage and litters in the residence is not enough, but the entire environment must be clean and made sanitary by regular and thorough cleaning to make the sanitation procedure in the area meaningful. Environmental sanitation programmed (Hamman, 2002).

WHO Joint Committee on environmental sanitation (2005), resolved that public refuse collection by the inhabitants is the first step in the elimination of solid waste from the environment, adding that, in developing countries like Nigeria, environmental sanitation such as the removal of solid and liquid waste, food hygiene, pollution control and the control of industrial wastes has been receiving insufficient attention from the public. People should learn good health habits at early childhood stages so as to enable them transfer good habits in to adult age for better living.

In Abia state, the spokesman for the Environmental Health Officers Association of Nigeria (EHOAN), Mazi Ogbonnaya Akoma (2008), explained that Abia state government

failed to constitute a governing board for the State Environmental Protection Agency (ASEPA) since its inception in 2004. Abia State government and its agency, have continued to engage the services of quacks in environmental sanitation, contrary to the provisions of Act No.11 of 2002 that regulates environmental health practice in Nigeria, pointing out that ASEPA today prosecutes environmental sanitation in Abia state with only three (Junior) environmental health officers as a result of the over-politicization of environmental sanitation in the state.

Similarly, in Kano the environmental sanitation unit has been crippled with insufficient man power and hindrance of law enforcement by sanitary workers on environmental sanitation. The issue of environmental sanitation is an issue of great concern to be realized by people and government bodies if we are to succeed in putting things in better positions.

According to Igbamugo (1998), filthy environmental and its relationship to ill health prompted the Nigerian government to launch the 5th phase of the War against Indiscipline (WAI) in June, 1984. He emphasized that the poor government policy and the non-challant attitude of almost everybody on environmental sanitation are the main causes of diseases and ill-health, adding that poor environmental sanitation in some parts of the world has led to the Joint WHO efforts on National Agencies and International bodies in the control of environment from filth and disease vectors.

2.7 Summary and Uniqueness of the Study

Many professionals such as doctors, health educators and environmental health officers have done a lot to solve environmental health problems. Efforts at both the national and international levels have earlier and presently been made to solve environmental health problems using guidelines, best practice document and promotional materials. Environmental

health issue is the principle and practice of effecting healthful and hygienic conditions in the environment to promote public health and welfare, improve quality of life and ensure a sustainable environment for all. Environmental health deals with some areas referred to as the essential components of environmental health issues which include: Solid Waste Management, Medical Waste Management, Excreta and Sewage Management, Food Sanitation, School health programme, Market and Abattoir Sanitation, Adequate Portable Water Supply, Pest and Vector Control, Management of Urban Drainage, Control of Reared and Stray Animals, Disposal of Dead (man and animals), Weed and Vegetation Control and Hygiene Education and Promotion.

This study is unique because it find out which urbanization factors (commercial activities, construction works, overcrowding, and transportation) lead to environmental health problems in Kano metropolis. It is also unique because it seeks responses from resident's age 20 and above, this makes for easy coverage and closer assessment of the situation among the youth.

Another uniqueness of this particular study is that most of all studies reviewed were either carried out at global level or at a different states of the federation such as Abia, Borno, Adamawa, Lagos, and Enugu State, whereas this study was conducted in the metropolitant area of Kano.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This study investigated perceived urbanization factors and environmental health problems in Kano metropolis: To achieve the purpose, this chapter describes the following: Research design, Population of the study, Sample and sampling technique, Data collection instrument, Validation of the instrument, Reliability of the instrument, Data collection procedure and Data analysis

3.2 Research Design

The research design used for this study is the Descriptive Survey Design. Survey design is effective in generating data from a relatively large number of cases at a time. The design is generally conceived as one in which a group of people or items are studied by collecting and analyzing data from a few items considered being a representative of the entire group. (Njodi & Bwala, 2004). This design is suitable for this work because it made it easier for the researcher to explore data from five selected Local Government Areas of Kano metropolis on selected variables on urbanization with which conclusion and generalization were drown.

3.3 Population of the Study

The population of this study is 1,688,905 (residents in Kano) male and female aged 20 years and above residing in the five (5) metropolitan Local Government Area of Kano state (National Population Commission, 2006). The summary of the population of the study is given in table 3.1 below.

Table 3.1: Population of the Study

S/N	Local Govt. Area	Population	No. of Wards
1.	Dala	418,759	5
2.	Gwale	177,437	5
3.	Municipal	371,243	5
4.	Nassarawa	355,729	4
5.	Ungogo	365,737	5
Total		1,688,905	24

3.4 Sample and Sampling Technique

A total of 384 respondents from five (5) Local Government Areas within Kano metropolis served as sample of the study. Amburg (2004) suggest that in an population above one million a sample of 384 is sufficient enough to use as sample for the study in a given location. The local governments are Municipal, Dala, Nasarawa, Gwale and Ungogo, which were selected through purposive sampling technique because they have the characteristic that address the variables of environmental health problems under investigation. Five (5) wards were selected from each L.G.A also using purposive sampling technique because each ward is selected based on its own characteristic for example, industries, slums and highly populated areas. Respondent from these words are selected through proportionate sampling technique because of the variation in the population size of each L.G.A. Dala has a population of 418, 759, Gwale has a population of 177, 437, while Kano municipal has a population of 371, 243, Nasarawa has 355, 729 and Ungogo has a population of 365, 737. (NPC, 2006)

Table 3.2: Sample of the Study

S/N	Local Govt. Area	Population	Sample 25%
1.	Dala	418,759	96
2.	Gwale	177,437	40
3.	Municipal	371,243	85
4.	Nassarawa	355,729	81
5.	Ungogo	365,737	84
Total		1,688,905	384

3.5 Data Collection Instruments

The instrument for data collection was researcher developed questionnaire Perceived urbanization factors and environmental health problems in Kano metropolis (PUFEHP) the questionnaire compromised 4 sections. Section A contains questions on commercial activities and environmental health problems. Section B contains questions on construction works and environmental health problems. Section C contains questions on overcrowding and environmental health problems. And section D contains questions on transportation and environmental health problems the questionnaire is the modified likert scale of summated rating, which enables respondents to indicate the extent of agreement and disagreement with a given statement. The Likert Scale points used is as follows strongly Agree S.A-4, points, agree A-3 points, disagree DA-2 and strongly disagree SA-1 point.

3.6 Validity of the Instrument

The draft questionnaire was given to four (4) experts in related field in the Department of physical and Health Education, for content and face validity of the instrument. Their observations, comments, criticisms, and suggestions were incorporated in the final draft of the questionnaire.

3.7 Reliability of the Instrument

To establish the reliability of the instrument, a pilot study was conducted using twenty (20) respondents in Katsina Local Government which has similar characteristic as Kano metropolis. Result obtained was subjected to Spearman Brown proficiency correlation and estimated reliability of 0.79 was obtained.

3.8 Data Collection Procedure

A letter of introduction from the Department of Physical and Health Education was obtained and presented to the five Local Government Areas of Kano metropolis, for the permission to conduct the research. 384 copies of questionnaire were distributed to the respondents by the researcher with the help of two (2) trained research assistants; who assisted in the distribution and collection of completed questionnaire. A period of two (2) weeks was used for the exercise at the end of which 359 questionnaire were successfully retrieved and used for analysis.

3.9 Data Analysis

Frequency count and percentage was used to organize and describe the demographic information of the respondents, while chi square was used for hypotheses testing at 0.05 alpha level.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

This study investigated perceived urbanization factors on environmental health problems in the metropolitan of Kano state. Three hundred and sixty four (384) questionnaires were distributed out of which three hundred and fifty nine (359) were duly completed and returned and were used for data analysis. This chapter describes the results and discussion of findings as follows.

4.1Results

The analyzed data for this study were tabulated and presented according to the tested hypothesis as follows:

Table 4.1: Chi-square Summary table on Commercial Activities as significant factor for environmental health Problems in Kano metropolitan

2value	**df**	**pro**				
FO	270	89	359	9.256	1	.001
FE	179.5	179.5				

2 91.256 df1 p 0.05

The above table shows the result of the analyzed data on commercial activities as significant factor for environmental health problems in Kano metropolitan indicated that 270 (75%) agree that commercial activities are factors for environmental health problems in Kano indicated that commercial activities are significant factor for environmental health problems in Kano metropolis and the null hypothesis which says commercial activities is not a significant factor for environmental health problem is rejected on the basis that significance

exist. This indicates that commercial activities are perceived urbanization factor that pose environmental health problems in Kano metropolis

Table 4.2: Chi-square Summary table on Construction works as significant factor for environmental health Problems in Kano metropolitan

2value	**df**	**prob**					
FO		281	78	359	114.788	1	.001
F E		179.5	179.5				

2 114.788 df1 p 0.05

Table 4.2 above shows the result of the analyzed data on construction works as an urban factor for environmental health problems in Kano state indicated that 281(78.27) agree that construction works is an urban factor for environmental health problems in Kano 2 =114.788 df1 p 0.05) shows that construction works is a significant urbanization/urban factor to environmental health problems in Kano state. The null hypothesis is rejected on the basis that significance exists. This indicates that construction works are perceived urbanization factor that pose environmental health problems in Kano metropolis.

Table 4.3: Chi-square Summary table on Overcrowding as significant factor for environmental health Problems in Kano metropolitan

2value	**df**	**prob**					
FO		241	118	359	42.142	1	.001
FE		179.5	179.5				

2 =42.142 df1 p<0.05

Table 4.3 shows result of the analyzed data on overcrowding as an urban factor for environmental health problems in Kano state indicated that 241(67.13) agree that overcrowding is a factor for environmental health problems in Kano metropolis while 2 42.142 df1 p<0.05) shows that overcrowding is a significant urbanization/ urban factor for

environmental health problems and null hypothesis which says overcrowding is not a factor for environmental health is rejected on the basis that significance exist. This indicates that overcrowding is perceived urbanization factor that pose environmental health problems in Kano metropolis.

Table 4.4: Chi-square Summary table on Transportation as significant factor for environmental health Problems in Kano metropolitan

2value	**df**	**prob**					
FO		247	112	359	253.794	1	.001
FE		119.7	119.7				

2 253.794 df2 p<0.05

The table above shows analyzed data on transportation as a factor for environmental health problems in Kano state shows that 247 (68.80) agree that transportation is an urban factor for environmental health problems in Kano metropolis while 112(31.91) disagree. The 2 253.794 df2 p<0.05) shows that transportation is a significant factor for environmental health problems in Kano state and the null hypothesis which says transportation is not a significant factor for environmental health problems in Kano state is rejected on the basis that significance exist. This indicates that transportation is perceived urbanization factor that pose environmental health problems in Kano metropolis

4.2 Discussion

The finding in table 4.1 revealed that commercial activities are significant factor for environmental health problems in Kano state. The present study is in line with that of Evelyn, and Thomas (2013) who reported a significant pollution in cities result from highly commercial activities such as Makurdi, Enugu, Kaduna, Jos, and Kano and so on Another research conducted by Gbehe (2004) on industrial activities stated that the environment is highly polluted in the process of execution, processing and disposal of minerals. Mining is a

process which involves the selective recovery of specific minerals from the earth crust for the benefit of mankind. Two basic methods are used. They are surface and underground mining which cause damage to the land and the processing and disposal of minerals pollute the soil and water. In Nigerian cities such as Lagos, Enugu, Ibadan, Kano, Port Harcourt, Benin, Warri and Kaduna these activities dominate industries and inject into the air pollutant that deplete the ozone layer. Similar research conducted on commercial activities by Chukwuma and Richard (2013) reported that the Nigerian cities such as Aba, Enugu, Onisha, Kano, Ibadan, and Lagos are characterized by huge amount solid waste dumps generated from households, industries, markets, schools, and streets trading. These perceived environmental problems can be attributed to migration, population increase, urbanization, construction, and industrialization coupled with inefficient, improper and sometimes non proper disposal of waste. Heaps of solid waste is indiscriminately formed on streets, homes, road side, markets and other places where human activities take place in the cities. The reason for the similarities between these studies and the present could be attributed to the fact that both studies are conducted within cities with high commercial background.

The finding in table 4.2 shows that construction works is a significant factor for environmental health problems in the metropolitan area of Kano state. This finding is in line with that of Lantran (1990) who reported the significant impacts of construction activities on both nearby communities and the natural environments. People and properties may be in the direct path of roads works and are being affected psychologically and economically as many lose their properties leading to emotional imbalances . People may also be indirectly affected by construction, through the disruption of livelihood, loss of accustomed travel paths and community linkages, increase in noise and pollution, and more minor road accident. Disturbance to the natural environment may include soil erosion, changes to streams and underground water, and interference with animals and plants life. Road construction

sometimes causes significant effect on sensitive environment and the lifestyle of indigenous people. The similarities between the two studies could be attributed to the fact that both studies investigated environmental health problems with construction works as a perceived factor.

The finding in table 4.3 indicated that overcrowding is a significant factor for environmental health problems in Kano state metropolis. The tabulated chi-square shows that overcrowding is one of the major factors that contribute to environmental health problems in Kano state. This study is in line with that of Izomoh and Olumu (2005) who noted with regret that most people in developing countries of Asia, Latin America and Africa lives in dwellings, which could be considered dangerous to health and affront to human dignity. This is mostly reflected in houses that lack proper ventilation and lightening. In some Nigerian homes, factories and offices ventilation is not included while planning for such buildings but this is most vital aspect of construction that makes for comfortable living. The similarities between the researches could be seen that both researches are conducted on the effects of overcrowding.

The finding in table 4.4 revealed that Transportation is a significant factor for environmental health problems in Kano metropolis. Transportation could be seen as one of the contributing factor for environmental health problems in Kano metropolis. According to a research on urban transport problems conducted by Ogunsanya (1993) which is in line with this research that environmental pollution and noise pollution have also been identified as one of the urban transport problems in Nigeria. This is as a result of discharge effluents and emission from automobiles. Pollution including noise generated by circulation is a serious impediment to the quality of life and even health of urban population, further energy consumption by urban transportation has increase and so the dependency on petroleum. The major pollutant includes carbon monoxide, lead, nitrogen and hydrocarbon which are

significant source of eye and respiratory diseases. The increase number of old and poorly maintained vehicles on Nigeria roads makes the pollution effects to be more serious. The land consumption is also a significant transportation requirement especially for the automobile. In addition to the transport routes, substantial requirements are also needed for car parking. The reason for the similarities between both researches can be seen that both researches are conducted on how transportation affects environmental health problems.

CHAPTER FIVE

SUMMARY, CONCLUTIONS AND RECOMENDATIONS

5.1 Summary

The study was carried out to examine the perceived urbanization factor on environmental health problems in Kano metropolis the background of the study stated Urbanization as a major change taking place globally. Literature was reviewed indicated that all the four urbanization factors identified by the study have implication for environmental health problems as perceived by different authorities.

To achieve the purpose of the study, four research questions were formulated while four hypotheses were generated and tested using Chi-square at 0.05 level of significance. A descriptive survey design was adopted for the study using a sample of 384 respondents randomly selected from five local government within Kano metropolis.

Data were collected using self developed questionnaire developed on a Likert-type scale, named the perceived factors of urbanization on environmental health in Kano Metropolis. The reliability of the instrument was ascertained through pilot study conducted in Katsina Local government area of Katsina state. The major findings indicated that commercial activities is a significant factor to environmental health problems in Kano metropolis, construction works is a significant factor to environmental health problem in Kano metropolis, overcrowding is a significant problem to environmental health problems in Kano metropolis, transportation is a significant problem to environmental health problem in Kano metropolis.

5.2 Conclusions

Based on the findings the following conclusions were drawn:

- High level of Commercial activities causes some environmental health problems in Kano metropolis. For example sewage disposal from industries have caused a lot of health problem to people around Sharada industrial area.
- Construction works as a result of urban development posed resident to environmental health problems in Kano metropolis. For example during the recent demolition of houses and shops by the Kwankwaso government, many people suffered respiratory related illnesses around the areas where construction works were carried.
- Overcrowding due to population size is a big problem to environmental health in Kano metropolis. For example areas where many people are crowded such as Kabuga, Brigade, Dorayi, Unguwa Uku recorded highest cases of meningitis and related illnesses.
- Sophisticated transportation system in Kano metropolis stand to be a nuisance to environmental health in Kano metropolis. For example around the Sabon Gari market, smoke emitted from cars engines make it almost impossible to breath.

5.3 Recommendations

The following recommendations were made:-

- Kano state government should re-organize commercial areas to modern markets so that environmental health problems can easily be controlled
- Construction works should be carried out at less busy hours (night) and some control mechanism should be applied like sign boards indicating work on progress and wetting /watering work site to reduce dust.
- People should be enlighten on the danger of living in overcrowded house and the provision for ventilation should also be consider during construction of buildings.
- Kano state government should increase more roads and provide commercial parking space to reduce conjunction on roadside and traffic jams.

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QUESTIONAIRE

Dear Respondent,

I am a post graduate student undergoing my M.SC research with the Department of Physical and health education, Bayero University Kano. The title of the research is perceived Urbanization factors on environmental health problems in Kano Metropolis" I would be grateful if you respond to the following questions, and your response would be confidentially treated and used strictly for academic purpose.

SECTION A**: Commercial Activities and Environmental Health Problems**

S/N	Statement	SA	A	D	SD
1.	Hawking and rampant commercial activities in Kano city make the environment dirty and unhealthy.				
2.	Commercial activities in an overcrowded environment lead to increase in material waste in Kano city.				
3.	High level of commercial activities in kano metropolis and inadequate public conveniences contribute to rampant urine defecation in public places.				
4.	Inadequate refuse dumping site in Kano metropolis makes the environment filthy and unhealthy.				

SECTION B: Construction Works and Environmental Health Problems

S/N	Statement	SA	A	D	SD
5.	Smoke from industrial areas pollutes the neighboring environments				
6.	Dust from construction works in Kano city produces a lot of dust that affect environmental health				
7.	Some buildings are constructed on water channels which lead to over flooding.				
8.	Construction on water pipeline is one of the factors that leads to unsafe drinking water.				

SECTION C: Overcrowding and environmental health problems

S/N	Statement	SA	A	D	SD
9.	Constant uptake/utilization of goods and services in Kano metropolis by the growing population (overcrowd) contribute to indiscriminate dumping of refuse on the street and major roads.				
10.	In slum areas there is no plan for drainages leading to the breading of mosquitoes and no accessible roads to cater for emergency needs				
11.	Overcrowding is one of the contributing factors of surface defecation				
12.	Population growth leads to building of houses that are not fit for human habitation				

SECTION D: Transportation and Environmental health problems

S/N	Statement	SA	A	D	SD
13.	Traffic jams are one of the problems cause by transportation in Kano city				
14.	Smokes from the vehicles pollute the air in Kano city				
15.	Rampant vehicle accident in Kano city are as result of polluted vehicle transportation				
16.	Indiscriminate disposal of vehicle waste in Kano city is due to sophisticated transport system				