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UNITE DE RECHERCHE ET DE FORMATION DOCTORALE EN SCIENCE HUMAINE
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FACULTE DES ARTS, LETTRE ET SCIENCES HUMAINES
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CHALLENGES OF URBANIZATION AND SUSTAINABLE MANAGEMENT STRATEGIES IN BAMENDA MUNICIPALITY

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SPECIALTY: MARGINALITY, STRATEGIES OF DEVELOPMENT AND GLOBALIZATION

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DEDICATION

To

my beloved mother; Mary Fonyuy who has been a great source of inspiration to my success.

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ABSTRACT

Most metropolitan towns and cities in the sub-Sahara Africa, Bamenda inclusive are grappling with the challenges of rapid urbanization and sustainable urban development. This mainly results from improper urban planning policies. These challenges are manifested by way of informal settlements, misuse of public spaces, poor waste management, occupation of risky-prone areas (wetland and slopes), reduction in agricultural land, loss of biodiversity among others. It was against this gloomy background that this study sets to investigate urbanization challenges (socioeconomic and environmental) and sustainable management strategies in the Bamenda municipality.

This work set out to investigate why Bamenda is facing urbanization challenges despite the existence of urban management strategies that have been put in place. Three hypotheses were set to guide the study. Research methods and techniques that were adopted and used led to data collection, processing and analysis. Secondary data was collected from published and unpublished documents. Primary data was gotten through field surveys where a total of 152 respondents from 9 selected quarters in the Bamenda municipality provided responses. Additionally, primary data was gotten through, interviews, focus group discussions and observations, where observed phenomena were captured using a digital camera. The data gotten from questionnaires was processed using Microsoft Excel while Satellite images were processed using landsat (1973, 1988, 2003, and 2023).

Inferential and non-inferential analyses were done that pave the way for the testing of hypotheses, drawing up meaningful conclusions, suggestions and policy implementation. The outcome of the data collected, treated, analyzed and interpreted revealed that there has been a significant increase in population growth in the Bamenda municipality from 1973 to 2023 that is 34000 population with a growth rate of 9.68% and 594000 population with a growth rate of 3.66% in 2023 (Bamenda-historical population data, 2023) which have not been commensurate with proper urban planning policies. The study equally found that some strategies of urban challenges have equally been put in place in the study area though with just 53% respondent aware of the strategies, 42% unaware and 4% of the respondent ignorant of the whole thing. In the assessment of the challenges, it was realized that direct implication of this has been informal settlement and misuse of public spaces revealed by the field studies with 75% of the respondents approving that informal settlement is the order of the day in Bamenda town. Also, poor urban planning have resulted to urban sprawl with visible impacts on fauna and flora especially in aquatic ecosystems as most of the urban dwellers are not even aware of the existence of master plan (68%). Again, waste disposal challenges was noted to be a critical urban challenge in Bamenda which couples with environmental issues (land, water and air pollution) as 39.47% of respondents reveal that the companies assigned to collect waste rarely come around to collect it.it was revealed that they pass just once in week to collect the waste with 21.71% of the respondents confirming the fact. Furthermore, illegal motor parks and insecurity challenges (socio-political crisis, since 2016) were noted and confirmed by 88% of respondents to be the outstanding challenges to sustainable urban development in the study area. This study therefore recommends amongst other measures the strict implementation of planning regulations and the development of a roadmap that encapsulates the sustainable city development goals. In addition, the recycling of waste, enforcing pollution controls norms. Furthermore, land use maintenance measures such as ecological land use planning, open space preservation, tree planting and the creation of community gardens can be a cornerstone for sustainable development.

Key words: challenges, urbanization, sustainable, and management strategies, Bamenda.

RESUME

La plupart des villes métropolitaines d'Afrique subsaharienne, y compris Bamenda, font face aux défis de l'urbanisation rapide et du développement urbain durable. Cela résulte principalement de politiques d'urbanisme inadéquates. Ces défis se manifestent par le biais d'établissements informels, d'une mauvaise utilisation des espaces publics, d'une mauvaise gestion des déchets, de l'occupation de zones à risques (zones humides et pentes), de la réduction des terres agricoles, de la perte de biodiversité, entre autres. C'est dans ce contexte sombre que cette étude vise à examiner les défis de l'urbanisation (socio-économiques et environnementaux) et les stratégies de gestion durable dans la municipalité de Bamenda.

Ce travail visait à comprendre pourquoi Bamenda est confrontée à des défis d'urbanisation malgré l'existence de stratégies de gestion urbaine mises en place. Trois hypothèses ont été établies pour guider l'étude. Les méthodes et techniques de recherche adoptées et utilisées ont permis la collecte, le traitement et l'analyse des données. Les données secondaires ont été obtenues à partir de documents publiés et non publiés. Les données primaires ont été obtenues grâce à des enquêtes sur le terrain, où un total de 152 répondants provenant de 9 quartiers sélectionnés de la municipalité de Bamenda ont fourni des réponses. De plus, des données primaires ont été obtenues par le biais d'entretiens, de discussions en groupe et d'observations, où les phénomènes observés ont été capturés à l'aide d'un appareil photo numérique. Les données obtenues à partir des questionnaires ont été traitées à l'aide de Microsoft Excel, tandis que les images satellites ont été traitées à l'aide de Landsat (1973, 1988, 2003 et 2023).

Des analyses inférentielles et non inférentielles ont été réalisées, ouvrant la voie à la vérification des hypothèses, à l'élaboration de conclusions pertinentes, de suggestions et à la mise en œuvre de politiques. Les résultats des données collectées, traitées, analysées et interprétées ont révélé qu'il y a eu une augmentation significative de la croissance démographique dans la municipalité de Bamenda de 1973 à 2023, soit une population de 34 000 habitants avec un taux de croissance de 9,68 % et une population de 594 000 habitants avec un taux de croissance de 3,66 % en 2023 (Données historiques de la population de Bamenda, 2023), qui n'ont pas été à la hauteur des politiques d'urbanisme adéquates. L'étude a également révélé que certaines stratégies de gestion urbaine ont été mises en place dans la zone d'étude, bien que seulement 53 % des répondants soient au courant de ces stratégies, 42 % en soient inconscients et 4 % des répondants ignorent tout de ces stratégies. Dans l'évaluation des défis, il a été constaté que les conséquences directes de cela ont été l'établissement informel et la mauvaise utilisation des espaces publics, révélés par les études de terrain, où 75 % des répondants ont confirmé que l'établissement informel est monnaie courante à Bamenda. De plus, une mauvaise planification urbaine a entraîné l'étalement urbain avec des impacts visibles sur la faune et la flore, en particulier dans les écosystèmes aquatiques, car la plupart des habitants urbains ne sont même pas conscients de l'existence d'un plan directeur (68 %). De même, les défis liés à l'élimination des déchets ont été identifiés comme un défi urbain crucial à Bamenda, associé à des problèmes environnementaux (pollution des sols, de l'eau et de l'air), puisque 39,47 % des répondants révèlent que les entreprises chargées de la collecte des déchets viennent rarement les collecter. Il a été révélé qu'elles ne passent qu'une fois par semaine pour collecter les déchets, 21,71 % des répondants confirmant ce fait. De plus, des défis liés aux parcs automobiles illégaux et à l'insécurité (crise socio-politique depuis 2016) ont été constatés et confirmés par 88 % des répondants comme étant les principaux défis du développement urbain durable dans la zone d'étude. Cette étude recommande donc, entre autres mesures, la mise en œuvre stricte des réglementations en matière d'urbanisme et l'élaboration d'une feuille de route intégrant les objectifs de développement urbain durable. De plus, le recyclage des déchets, l'application de normes de contrôle de la pollution, des mesures de préservation de l'utilisation des terres telles que la planification écologique de l'utilisation des terres, la préservation des espaces ouverts, la plantation d'arbres et la création de jardins communautaires peuvent constituer des pierres angulaires du développement durable.

Mots-clés : défis, urbanisation, durable, stratégies de gestion, Bamenda.

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LIST OF ABBRIEVIATIONS AND ACRONYMS

BCC	:	Bamenda City Council
BUCREP		Bureau Central de Recensement et d'etude de la Poulation du Cameroun
CBD	:	Central Business District
WCED		World Commission on Environment and Development
CBO	:	Community Based Organization
CPT	:	Central Place Theory
FALSS	:	Faculty of Arts, Letters and Social Sciences
GIS	:	Geographic Information System
HILT	:	Human-Induced Land Transformation
ISG	:	Idea of Smart Growth
LULC	:	Land Use and Land Cover
MINDHU	:	Ministry of Housing and Urban Development
NIC	:	National Institute of Cartography
NLM	:	National Library of Medicine
UGB	:	Urban Growth Boundary
UN	:	United Nation
UNCED	:	United Nation Conference on Environment and Development
UNFPA	:	United Nation Population Fund
UN-HABITAT	:	United Nation Human Settlement Program
UPC	:	Union de Population du Cameroun
USA	:	United State of America

GENERAL INTRODUCTION

0.1 Background to the Study

The Geography of Urbanization is rapidly changing and in multiple dimensions. The last major change was the accumulation of hunters-gatherers into villages many thousands years ago. A village is characterized by common bloodlines, termite relationships and communal behavior whereas urban culture is characterized by distant bloodlines, unfamiliar relations and competitive behavior. This unprecedented urban growth is forecast to continue and intensify in the next decades. The process of urbanization is increasing in both the developed and developing countries. However, rapid urbanization, in particular, the growth of large cities and the associated problems of unemployment, poverty, inadequate health, poor sanitation, urban slums, environmental degradation, inadequate energy and water supply, pose formidable challenges in many developing countries. After the submission of the Brundtland Commission Report on the connection between human activities and environmental degradation, the concept of sustainable development emerged as a new field of study and the concept of sustainable development was defined as development that meet the needs of the present without compromising the ability of future generation to meet their own need, World Commission on Environment and Development (WCED, 1987). Available statistics shows that more than half of the world population that is 6.6 billion people living in the urban areas', is crowded into 3% of the earth land area (UNFPA, 1993). The proportion of the world population in urban areas was less than 5% in 1800, it increased to 47% in 2000 and is expected to reach 65% in 2030 (UN, 1981). However, more than 90% of the future population 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%) both are expected to be 54% urban by 2035(UN, 2002)

Urbanization is the driving force for modernization, economic growth and development not only in Cameroon but in different parts of the world, however, there is increasing concern about the effects of expanding cities, principally on health, livelihood and environment. The challenges of rapid urbanization and demographic trends for employment, food security, water supply, shelter and sanitation especially the disposal of waste (solid and liquid) that cities produce are staggering (UNCED,1992).

The 21st Century international flora (the 2002 world summit on sustainable development, the 2015 Sustainable Development Goals, the Paris Climate Accord, and the 2017, New Urban

Agenda, have been consistent with need for all the countries of the world to subscribe to sustainable growth in all aspects of development). We live in a world that present significant implications for the current and future generations (Daly, 2005). The UN Global Agenda for 2030, has called for urban sustainability by including goal 11 “inclusive, safe, resilient, and sustainable cities”. In 1976, the UN Conference on Human Settlements (Habitats I) focused on the ramification of rapid urbanization and implication for the urban sustainable agenda and in 1992 following the Rio Summit, local government accelerate the adoption of the agenda 21 to promote local sustainability planning. In the year 2012, the Rio+20 called for a local sustainability assessment (Maria et al, 2016).Urbanization is the outcome of social, economic and political development that lead to urban concentration and growth of large cities, changes in land use and transformation from rural to urban metropolitan pattern of organization and governance. More, the concept of urbanization is not about simply increasing the number of urban residents. It is about a complete change from rural to urban style in terms of industrial structures, employment, living standards and social security. During the process of urbanization, reflectivity of land surface is violently changed when large amount of natural or agricultural land are converted to built-up surfaces. Although Africa is fast urbanizing, mega cities with about 10 million inhabitants or more are few.

According to Cameroon urban sub-sector development strategy, most towns in Cameroon suffer from serious urban management problems due to non-implementation of urban management instruments (Priso, 2014). The situation in Bamenda like most urban centers in Cameroon is not different as the town is experiencing a rapid rate of urbanization as a result a of rapid in-migration and the natural increase with a growth rate that stands at 4.9% in 2005 (BUCREP, 2005) and about 6.3% in 2015(population estimates).This rapid growth rate contribute to the haphazard and disorganized development witnessed in the town today. The town and its suburbs are now becoming overcrowded leading to the emergence of settlement in risky areas. Achuo chi(1998) held that between 6 to 8% of the population of Bamenda lives in informal settlement developed on steep slopes with about 20% on flood plains while Ndenecho et al (2004) held that about 55% of the population of Bamenda live outside laws governing urban planning regulations .This situation calls for urgent measures for effective town management to reduce disaster risk, improve access to basic services by creating better income and employment opportunities and expanding necessary infrastructure for water, sanitation, energy ,transportation and information communication so as to reduce the number of people living in risky areas. Growth pressure will need to be carefully managed to ensure

that where growth occurs, it is sustainable and sympathetic to the existing character of this urban center. Understanding urbanization challenges is thus a guide for decision-makers and citizens in a bid to create a healthy, affordable and sustainable urban future in Bamenda Town.

0.2 Statement of the Research Problem

Rapid and uncontrolled urbanization is archetypical of urban centers of the developing world. Such leads to significant alteration of its ecosystems and loss urban greenery and habitat (Gairola et al, 2010) as well as habitat loss in myriad of environmental and socioeconomic challenges ranging from a reduction in green spaces to ecosystem deterioration, inadequate infrastructure, flooding, pollution, proliferation of informal housing, high crime wave, congestion, broken taps, loss of agro-pastoral land, poor disposal of waste, poor electricity and power supplies, inadequate implementation of urban planning policies. These, among others are salient issues concerning urban challenges in the Bamenda Town. The pressure on the natural resources is increasing day-by-day as the town is expanding towards marginal lands due to rising population. It is thus important to understand the implications of such changes on the natural environment in order to better manage resources through a sound sustainable management strategy.

The pressure of numbers and the demand for living space results in socioeconomic challenges. Road infrastructure in several parts of the town have been subjected to rapid deterioration due to poor and ill-adapted techniques of construction which often slow traffic flow. The increase population in Bamenda Town has resulted in high congestion of people and competition for the use of public services thereby leading to overcrowding in the public space like market, bars, hospitals and schools. An increase in the use of automobiles has resulted in traffic jam which causes lengthy delays. In addition, there is the problem of crime and violence because of social disparities. Bamenda town is facing the problem of crime and violence because of poverty and social exclusion. This is as a result of the competition for scarce resources. New families coming into the town have limited access to agricultural land and other income generating activities. As such, they are exposed to unlawful activities. There is also increased risk of diseases due to overcrowding and poor health practices. The constant inflow of people in this area have opened them to increase risk of diseases due to poor sanitation. There are often opened to diseases like typhoid, malaria, and tuberculosis.

Settlement conditions in Bamenda are deteriorating due to poor urban management strategies. People now settle in accident zones prone to natural hazards such as floods (Sisia,

Mulang). The floods to an extent are as a result of poor waste management. Poor disposal of waste is the order of the day in the town. Most of the waste like plastic bottles and biodegradable waste are washed to water bodies where they block water passage. The result of this is overflow floods. In addition, there is poor town planning. Houses are constructed haphazardly with no consideration for water channels. This either narrows or blocks passages (Kari Jackson 2022). The inability of the management sector and planning machinery to visualize probable areas with poor settlement strategy and its growth is consistent with the lack of appropriate spatial information and indicators. The rapid rate of uncontrolled development coupled with limited human and physical capital and management policies is also a major cause of this haphazard settlement. There is equally constant loose of biodiversity and forest resources which are being clear off to give way to human settlement.

The ecological degradation of the natural vegetation is one of the major environmental problems faced by the town today. Despite the growing public concern and increasing political rhetoric, most actions have been relatively ineffective in dealing with this problem as there is continuous loose of natural vegetation and the forest. Despite the orders put in place by the council, people still settlement in the risky zones of Sisia I, II and III and in the marshy areas of mulang. The natural environment of Bamenda is changing at a rapid rate as population increases so does the imminent threat to its ecosystem. Urbanization challenges has become a problem at the forefront of the Cameroon government concern. Development has inhibited the proper sustainability and balance within the ecosystem and without necessary implementation of current land use policies. This devastation will continue to deplete the natural resources. Bamenda, the capital of the North West region and the main town of the region, the fast growing nature of the town, coupled with poor management strategies, have meant that there is a lot of pressure exerted on its resources. There is, therefore, a need to propose a long lasting solution to reverse or attenuate the prevailing situation (Table 1).

Table 1 Socioeconomic and Environmental Challenges in the Bamenda Municipality

Socioeconomic Challenges	Environmental Challenges
- Limited space	- Flooding
- Informal housing	- Landslides
- High crime wave	- Poor waste management
- Congestion (traffic jam)	- Loss of biodiversity
- Shortage of portable water	- Land degradation
- Poor power supply	
- Bad stage of the road (potholes)	
- Absence of parking spaces	

Source: Field work, 2023

0.3 Research Questions

0.3.1 General Research Question

Why is Bamenda facing urbanization challenges despite the existence of urban management strategies that have been put in place?

0.3.2 Specific Research Question

1) How does the urbanization process in Bamenda affect socioeconomic life of the people in Bamenda?
2) How does the urbanization process in Bamenda affect the environment in Bamenda?
3) To what extent are urban management strategies put in place in Bamenda sustainable?

0.4 Research Objective

0.4.1 General Research Objective

1) To investigate why Bamenda is facing urbanization challenges despite the existence of urban management strategies put in place

0.4.2 Specific Research Objective

1) To find out how the urbanization process in Bamenda affect the socioeconomic life of the people in the town
2) To find out how the urban development process in Bamenda is affecting the urban environment

3) To investigate the extent to which the urban development strategies put in place in Bamenda are less sustainable

0.5 Research Hypotheses

1) The ill adapted urbanization process in Bamenda town is negatively affecting the socioeconomic life of the population
2) The uncontrolled urban development process in Bamenda is negatively affecting the urban environment
3) The use of alien urban development norms in Cameroon has rendered the process of urbanization in Bamenda less sustainable

0.6 Justification of the Study

Socioeconomic and environmental challenges relating to rapid urbanization continue to take much attention in most scholarly research works. Little attention has been given to stakeholders responses to environmental and socioeconomic challenges posed by high rate of rural urban migration in the Bamenda Town. This study therefore, look at how urbanization patterns has changed over time in this area, how the changing urbanization pattern is being perceived and responded by all the stakeholders involved in handling problems brought by urbanization like land pollution, floods, environmental degradation, loss of biodiversity, poor disposal of waste, increase crime wave, informal settlements, congestion, urban poverty, and the problems faced by central government, Divisional officers, municipal councils and traditional rulers ,to combat these socioeconomic and environmental challenges caused by urbanization have equally been examined.

This study therefore provide stakeholders, practitioners as well as researchers, results that can help in framing policies to ensure sustainable management. This is because it facilitate and fast tract the sharing of information by facilitating access to underlying data. It give added knowledge to existing literature which will act as a reference to future researchers. The proposals which are spelt out in this work will help policy makers to create conditions that will be conducive and sustainable as far as urbanization policy and management is concerned as in line with the UN General Assembly that approved a resolution in September 2015 setting the 2030 Agenda for Sustainable Development which was aimed at transforming our world to become more sustainable and resilient where humanity would be free from tyranny of poverty and getting our planet secured (UN, 2015).

0.7 Delimitation of the Study

This study is delimited into three main dimensions which are the thematic, temporal and the spatial dimensions. This helps to understand the study in themes, time and on space which gives in the geography in the work.

0.7.1 Thematic Delimitation

This study investigates challenges of urbanization and sustainable management strategies in Bamenda municipality. The study is limited to urbanization challenges (the haphazard and unplanned occupation of the urban area and the expansion of the town towards risky zones in total disregards to strategies put in place). The work examines the evolution of Bamenda municipality in relation to urbanization (the origin of Bamenda municipality, urban spatial development, characteristics of the most urbanized areas, forms and measurement of urbanization). It also investigate the implementation of urban planning and strategies put in place in relation to urbanization challenges in Bamenda municipality (stakeholders involved in putting the strategies, urban planning laws in Cameroon and Bamenda, similarities and discrepancies between management strategies and urbanization in Bamenda. The study further assesses the socioeconomic and environmental implications of urbanization due to urban planning deficiencies and management strategies in most of the areas affected.

0.7.2 Temporal Delimitation

This study covers the period from 1973 to 2023. This period was chosen base on the fact that, Bamenda experienced a significant increase in population after the Referendum in 1972. This growth especially in the urban centers was due to the launching of the Green Revolution in Cameroon that led to the increased food production to feed the urban population and increased standards of living, the suppression of armed groups like *Union des Population du Cameroun* (UPC) that emerge in the country before 1970 and the creation of the united Republic of Cameroon in 1972. This period was equally chosen because the first population and housing census in Cameroon took place in 1976. This gave precise population data for Cameroon and Bamenda municipality in particular (2012 statistical year book for North West Region).This starting point, enable this study to evaluate the manifestation of urbanization challenges despite the existence of a master plan in Bamenda municipality since 1985. In the year 2016, the Anglophone crises started forcing people from major villages in the region to settle in Bamenda Town. Today, the activities of these migrants are attracting public attention

due to its increasing influence in the area. This period therefore gives a good background for the research.

0.7.3 Spatial Delimitation

Bamenda is the capital of the North West Region of Cameroon.it is located between longitude 10° 09” and 10° 11” east of the Greenwich meridian and latitude 5° 56’0” and 5° 58” North of the equator (figure 1). It is found in the western highlands (Ndi et al.2017). The town experiences a humid and warm climate characterized by the rainy and dry season. The rainy season runs from mid-March to mid-November while the dry season runs from mid-November to mid-March. Average annual rainfall in Bamenda is 2247.60mm. The maximum temperature is about 25.7°c while the minimum temperature is about 23.0°c. The major type of wind in the area is the North East trade winds (Harmttan winds) responsible for the dry season and the south west monsoon responsible for the rainy season (Department of meteorology, North-west Regional Delegation of the Ministry of Transport, 2006). The vegetation of the town is the Guinea Savanna vegetation (Neba,1999). The town of Bamenda is bounded to the North by Bafut, East by Bambui, South by Santa and West by Mbengui and Bali. Bemenda is 374km and 316km from Yaoundé and Douala respectively (North West Regional Delegation of Transport, 2012). The local administration of the Bamenda is structured into Bamenda I, Bamenda II, and Bamenda III councils. Bamenda I is found on a high lava plateau (up station) with an altitude of about 1400m above sea level. Bamenda II and Bamenda III is found on a low plateau (Down town) with an altitude of about 1100m above sea level. These two plateaux are separated by a broad escarpment (Ndi et al.2017).

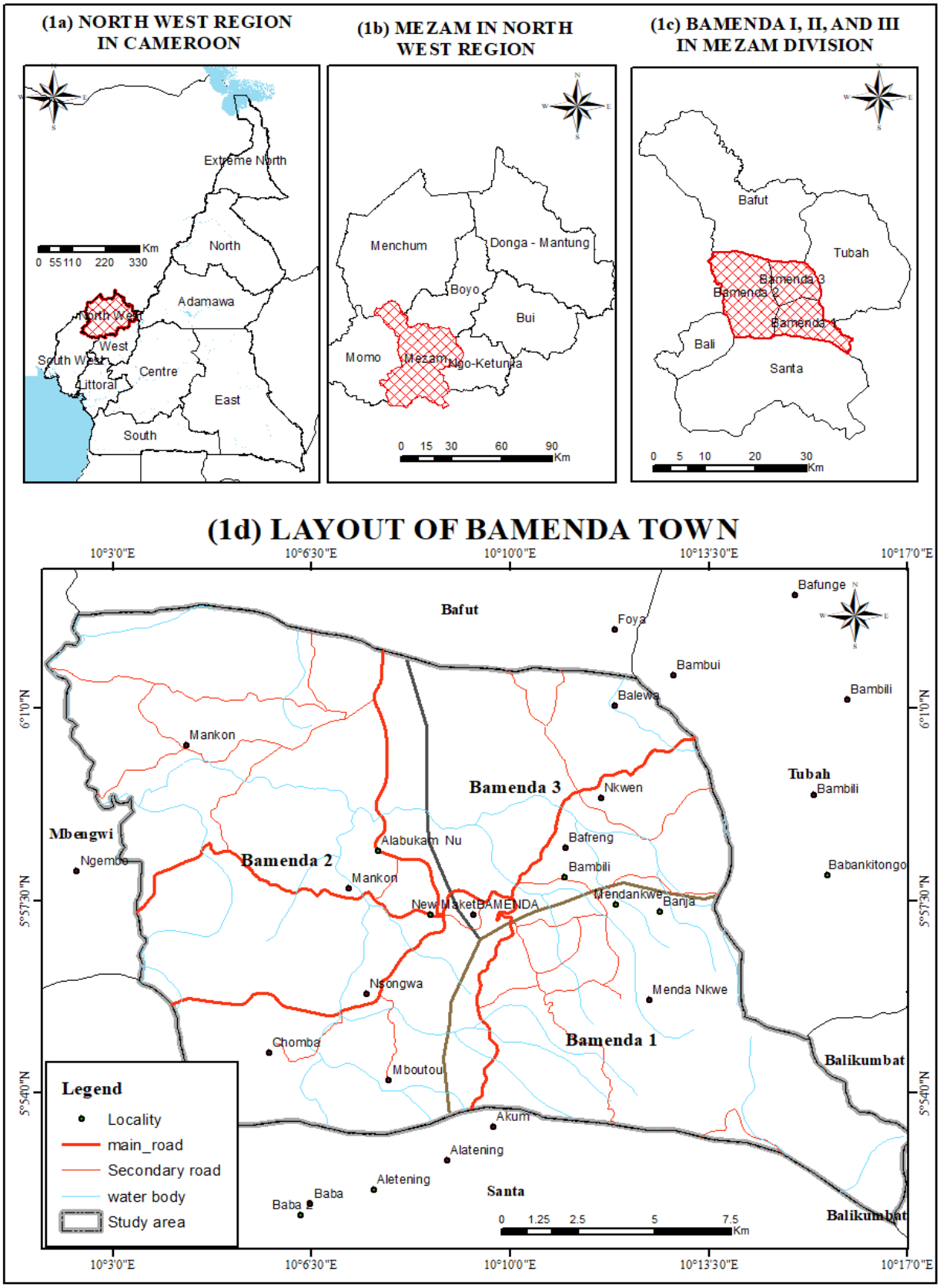


Figure 1: Location of the study area

Source: Adopted from the NIC, 2023

0.8 Literature Review

This portion of the work reviews what other authors have written in relation to this topic. This to acknowledge the works of other authors, fill knowledge gaps and ensure avoidance of work duplication, and to demonstrate the contribution of specific piece of work to knowledge development .It is in this light that, a wide range of texts, journals, conference papers, published and unpublished documents, reports, dissertation and PhD theses were consulted to build a rich and befitting literature to proceed with this study. These materials were gotten from various libraries such as the Faculty of Arts, Letters and Social Sciences (FALSS) library, the Geography department library, and relevant websites in the internet. This section of the work is divided into three sub part in other to give a well organized literature review on this research work. These part include a review of environmental problems, socioeconomic problems and urban management strategies.

0.8.1 Environmental Problems

Previous studies on open space have emphasized their functions and spatial distribution with emphasis on the role played by small areas of green open space as against larger scale parkways, rivers and stream valleys which connect green networks (Walmsley, 1995). In the Bamenda urban environment, research focus centered on land use dynamics and wetland degradation (Kometa et al, 2012; Balgah et al, 2016; Fogwe, 2016) Issues related to urban green space have so far not received research attention even in the face of escalating population growth and urban development. (Ndzifon, 2016) in his study looks at the land use dynamics and wetland management in the Bamenda urban development policy implication using land maps for two periods. That is 1984 and 2014. According to researcher, the results from land use analysis showed that between 1984 and 2014, significant changes were observed from residential land use which increased in surface area from 43% as of 1984 to 53% in 2014. The study further shows that agricultural land use increased from 11% to 34%. Conversely, surface area covered by wetland reduced from 27% in 1984 to 6% in 2014. In all these, the authors were less interested in the fact that there is also loss of biodiversity which also comes as a result of land use dynamics.

Several studies on urban development problems have been undertaken in Bamenda. For instance, the effects of urban growth on waste management (Achankeng, 2003), the hydro-geomorphological problems of urban development. (Nyambod, 2010; Kometa et al, 2016; Fogwe, 2016; the implication of urban growth on wetland management (Kimengsi et al, 2016)

planning implication of urban greening (Fogwe, 2017), including strategies to develop urban water resources (Fogwe et al.2017). However, issues of water management practice and their sustainability implications, still beg for clarity.

Balgah (2017), writing on the consequences of rapid and uncontrolled urbanization in Bamenda III is of the view that Bamenda III has witnessed dramatic changes in its peri-urban zone. Such changes according to the scholar are exemplified by the multiplication of land uses, a reduction in agricultural land in favour of settlement and other infrastructural development as well as wetland invasion. His study investigates the evolution, drivers and development implication of peri-urban land use dynamics. The results show that during the year 2000-2015, there was a reduction in agricultural land area from 2943hacters to 1389hacters and a corresponding increase in the area for settlements from 1389hacters to 2943hacters. This study is not interested on the fact that land use dynamics also lead to loss of biodiversity which in return cost the life of animal species. This land use dynamics has a significant development implication in terms of future planning perspective, future development at the expense of biodiversity in the area.

Balgah et al (2020), examine urban planning challenges and prospects in Nkambe town. The authors note that Nkambe like in other emerging Cameroonian towns suffers from the problem of socioeconomic and environmental problems and need adequate urban spatial planning. The scholars notice that the driving forces of urban disorder where population increase manifested through inadequate enforcement of its plan, non-respect of building codes, poverty and limited households with potable drinking water, business conflict, inadequate health facilities and increasing crime wave. The work admits the fact that rapid urbanization comes with urban challenges. This work is interested in the problems population increase brings to the natural environment

Nkwemoh et al (2017) study floods in the wetlands of North western highlands of Yaounde. The results of the study shows that illegal occupation of valleys and marshy areas by population and the haphazard construction of houses along water courses constantly lead to floods. The study went further to show that floods are caused by the establishment of informal business enterprices (wood sales, carpentry workshops, motor garages, bakeries, car wash point) along water courses and wetlands. The authors went ahead to say that the uncontrolled disposal of solid and liquid waste in streams and water ways and poorly excuted drainage works by engineering companies are some of the factors of risk. The study also show that the expansion of settlement, agricultural and commercial activities on hill slopes lead to deforestation of

mountain slopes which accelerates runoff after torrential rainfall leading to water discharge in the surrounding valleys and floods. The authors were less intereted on the fact water ways are adapted from the western world and that there is inadequate knowledge production and knowledge validation in most African towns which also contribute to environmental problems.

Singh et al, (2008) attempt to assess the effect of city expansion on the countryside, especially on loss of agricultural land and conversion of agricultural land to non-agricultural uses. The data was collected from comprehensive survey of about 130 villages, questionnaires and interviews. The city population has increased 5 times and area has increased 6 times. The study discovers that cultivated lands are utilized for residential purposes. The study also notices that the natural landscape closed to the city were being destroyed. In all this, the authors were less interested on the fact that the forest is also clear off and that biodiversity is being loss due to advancement of settlement.

0.8.2 Socio-economic challenges

Rapid and uncontrolled urban growth which extends at the peri-urban fringe, makes the acquisition of land a necessity. From 1976 to 1988, the country experienced a rate of urbanization which grew from 28.5% to 40.4%. Current estimate stand at around 45%. Such areas as time goes on increasingly develop in commercial centers unfortunately without any planning or control to avert and side step anarchy. The town of which is the headquarters of the North West region is in a metamorphosed manner (Fombe et al 2012). This section in Bamenda called the commercial center (popularly known as Commercial Avenue) gained prominence around the 1970's (Ngwa et al, 2017) following the concentration of most business activities in the area. In all these, the authors are less interested in the fact that urban increase also create problem such as crime, poverty, pollution and slum creation.

United Nation (UN, 2016) writing on urbanization in Cameroon pointed out that most towns in Cameroon, such as Nkambe have outgrown their socio-economic infrastructure and as a result, drinkable water is becoming scarce, sewage is not properly disposed of, plan housing is hard to find, transportation is inadequate and electricity is sporadically available. According to the report, urban centers face major problems. They are also power house of economic growth and catalysts for inclusion and innovation. This document admit the fact that demographic change is seriously impacting the social life of the people. This work is interested in the increase in the urban population and its influence on biodiversity and constant clear off

of agricultural land to give way to human settlement which is different from what the UN presented in the report.

Ibrahim et al (2009), affirm that urban areas are faced with the problem of increasing population and consequently inadequate supply of food items. In the year 2011-2013, an estimated 842 million people were suffering from chronic hunger; the United Nations (UN) recognized the right to food in the Declaration of Human Right in 1948 and has since noted that it is vital for the enjoyment of all other rights. They were less interested on the fact that an increase in urban population do not bring only hunger. This study focuses on urban poverty, urban housing problems and urban crimes. This is reflected by the fact that urban areas are unable to provide basic needs for it ever growing population.

In a similar way, Jonathan et al (2011) in a study about food security in Buea, says that, food security can be analyesd in the context of the urban environment as the population grows due to different factors of urban migration. To him, the most visible effect of urban expansion in Buea is discernible in the Peri-urban areas. This is especially in areas such as Bolifamba, Muea, Bokwai and Bomaka that have witnessed rapid growth. The scholar is of the view that food security incorporate a measures of resilience to future disruption or unavailability of critical food supply due to various risk factors, some of which are uncontrolled rapid urbanization, poor farm to market roads, loss of land for residential purposes, traditional farming techniques and rapid changing food habit which characterize Buea. The author is very pessimistic about food security in urban areas and is of the opinion that there is food insecurity in urban areas because of poor farm to market roads. This study however set out an optimistic view about urban agriculture in Bamenda urban area and how the idea of smart cities contribute in solving the problem of urban hunger

Cameroon has witness a rapid and uncontrolled urban growth, especially at the peri-urban fringe. Between 1976 and 2007, the urbanization rate grew between 28.5% and 65.4% (Balgah 2007). With a constant rise in food prices and no corresponding increase in income, urban dwellers are obliged to record a high household dependency ratio (MINPAT, 2009). In response, households in Buea have developed resilience techniques to cope with the rising food prices, loss of farms and low income to survive within the urban and semi-urban localities. The situation is more challenging among the poor whose purchasing power has consistently been eroded by falling real wages, inflation and the rising cost of living despite attempt by the government to increase minimum wages (Bronhilda 2012). This research intend to throw more light on other socio-economic problems such as crime waves and urban poverty. The study

goes further to assess sustainable management strategies in Bamenda in continuation to what Balgah and Bronhilda wrote in 2007 and 2012 respectively.

Underlying the urbanization of poverty, Maxwell argues that far from being an upwardly mobile strategy, migration to cities has become a rural coping strategy of the last resort (Maxwell 1981). Evidence from Sub-Saharan Africa suggests that while earlier migrant movement to cities may have been solely attracted by rural and urban wage differential, current migration are triggered by the need for migrant to diversity income sources by straddling both urban and rural areas .The aim is to reduce the number of mouths to feed in the rural areas irrespective of whether the migrants are better or worse off in the city (world bank,2009).This study will go a long way to investigate closely how the uncontrolled rural –urban migration affect the socioeconomic life of the people in Bamenda.

Saxen et al, (2009) study water supply for urban poor in India. To the authors, water supply in slums areas is a very pathetic situation as people do not have good water supply. They fetch water illegally from government water supplying pipes. The study went further to say that slums are located in polluted and unhygienic areas and that women and children are affected the most. For example, children loose precious education hours. Living in slums in a way increases the cost in terms of paying off informal sector venders and opportunity cost. The study is less interested on the fact that the problem of portable water in the urban areas is not only in the urban slums but also in almost all the areas of the urban centers as the water sources are being polluted making portable water scarce like the case of Bamenda.

0.8.3 Urban Management Strategies

Sustainable urban development remains complex in part by the nature of human occupancy of the urban space (Tchawa,2009) .This represents a series of urban governance challenges since it can impair the attainment of vision 2035 which aims at transforming Cameroon to " An emerging economy by 2035" (Cameroon vision ,2015). Although many scholars have research on housing problems in Cameroon cities (Fombe et al 2010), (Kimeng et al 2012),very little attention has been paid to improving building conditions with respect to town planning regulations and conflict prevention framework .This work seeks therefore to address the current research gap by using the case study of Bamenda, a classical Cameroonian town.

Kimengsi et al., (2020) in study on urban planning challenges and prospects in Nkambe town point out that the growing population of Nkambe like in other emerging Cameroonians towns suffers from the problem of socio-economic and environmental problems and need

adequate urban spatial planning. The study review that the driving forces of urban disorder where population increase manifested through inadequate enforcement of its plan, non-respect of building codes, inadequate health facilities, business conflicts, poverty and limited houses with potable driving water and increasing crime wave. The study recommended that there is need for change of mentality of the Nkambe man toward an awareness that the town has its carrying capacity and when overstretched could lead to devastating respond in an undesirable manner probably in future. In all these, the author did not share a complementary relation between customary institutions and the citizens. It is for this reason that this study seek to throw more light on the fact that there is a close relationship between customary institution and the citizens as far as effective urban planning is concerned.

Nguh et al (2016), study land use dynamics and wetland management in Bamenda: Urban development policy implication. They conclude their study by proposing that, land use dynamics can be checked by the application of zoning laws to control the change witnessed in the land uses. The scholars go further to suggest that the Bamenda city Council should promote public awareness through sensitization on wetland resources and should actively encourage the participation of the public, local government authorities and institutions in sustainably management. The authors did not pay attention on the problems the zoning laws have brought in the developed countries. It is the object of this study to bring or proposed effective urban planning policies and urban management strategy to be use in Bamenda. With this strategy, developing countries will not only learn from the mistakes of developed countries, they will be weighed down by vested interest and to that effect access myriad technological and organization innovation to power their progress.

Fogwe et al (2017), researching on urban Green Development Planning Opportunities and Challenges in Sub-Saharan Africa, found that, the Bamenda city council partnering with the UN-Habitat and the Dordrecht/Gorinchem city council of the Netherlands seek to implement an urban greening project with major focus to map out potential areas for creating parks in Bamenda. The project, which is a novelty in the rapidly changing urban landscape of Cameroon seeks to contribute to building a green economy that enhances nature based solution to climate change and at the same time offers economic and social benefit to its citizens. The researchers concluded that, the initiative will provide opportunities for employment, generate revenue for the city council and prevent uncontrolled city sprawl against the backdrop of the relatively unstable nature of the foothills and land use competition, largely driven by population growth and the daunting task of relocating prior users. They study further argued in favor of

the effective application of urban development policies to restrict encroachment around the area and engage in slope stabilization where necessary. They were not interested in bringing out precise stakeholders to do the proper follow up and monitory.

Previous studies on waste management in Cameroon have focused on waste collection, treatment, disposal practices and their environmental implications (Ngnikam, 2000) with little consideration of the legislative and regulatory aspects. However, achieving sustainable development goals associated with waste management would require the successful establishment of baseline levels of information from which more informed waste management and policy decisions can be made. In this study, a critical analysis of the current waste management situation in Bamenda is presented with particular reference to the various stakeholders in meeting specified waste management objectives.

The initiative adheres to the principle intelligent urbanism. It specifically falls within the principle one (maintaining a balance with nature) which stresses on the promotion of the assessment of fragile ecosystems and their conservation, and principle four which emphasizes conviviality within the urban space (Fogwe, 2016; Williams, 2003; Benninger, 2001). All these authors laid less emphasizes of effective follow up to make sure the laws and strategies put in place are respected by the city dwellers.

0.9 Theoretical and Conceptual Frameworks

0.9.1 Theoretical Framework

A number of models are used base on their relevance to this research topic; Challenges of urbanization and sustainable management strategies in Bamenda municipality.

0.9.1.1 Human-Induced Land Transformation (HILT) Theory

The HILT model was originally developed by Clark et al, 1997. This model was first used to explain regional urbanization patterns in the San Francisco Bay area. It has however, been applied in different urban areas like Washington DC and New Mexico. This model seeks to explain a one-way transition from a non-urban category to an urban category. This involve;

- converting space into a grid
- Establishing an initial set of conditions
- Establishing a set of transition rules that are applied for each iteration
- Recursively applying the rules.

Base on the above criteria, four different types of urban growth are distinguished in the HILT model. They are: spontaneous, Diffusive, Organic and Road influenced urban growth.

For the spontaneous neighborhood growth, randomly the cell may become a new urban center simulating the development of urban settlements in an undeveloped area. This growth type indicates the number of new centers that will be created subsequently.

For diffusive growth, a spontaneous urbanized cell may subsequently develop into a spreading urban center even though it may not lie near an already existing urban center.

For organic growth, a random cell may become urbanized if some of a neighboring cell is already urbanized (expansion of existing urban area)

For road influence growth, urbanization may expand along road network simulating development in newly accessible areas

The urban growth rules in HILT involves selecting a location, investigating the spatial properties of the neighboring cells and urbanizing the cell under consideration base on a set of weighted probabilities. There are five factors that control the behaviors of the system:

- A diffusion coefficient that determines the overall depression of the distribution both of single grid cells and in the movement of settlement outward through the road system.
- A breed coefficient that determines how likely a newly generated detached settlement is to begin its own growth cycle
- A spread coefficient that controls how much normal outward "organic "expansion takes place within the system.
- A slope resistant factor that influences the likelihood of settlement extending up steeper slopes
- A road gravity factor that has the effect of attracting new settlement into the existing road system if they fall within distance of a road (Clark et al, 1997)

In the HILT model, four major types of data are used. They include;

- land use data
- slope
- Transportation

- protected lands

Land use data and protected lands are used to determine the initial cell values at the start of the simulation. The slope associated with each grid cells is used to determine the likelihood of urban growth development along hillsides and the road information is used to influence the urbanization along transportation corridors

This theory is not without criticism especially when compared with what obtains in Bamenda municipality. The model was originally based on a study in San Francisco, a town in the developed world as compared to Bamenda which is in the less developed world. The patterns of growth proposed by this model are different from those taking place in Bamenda municipality like development induced by a road network. In Bamenda, infrastructure only comes after population growth has taken place. This is different from what obtains in the developed world. The rapid urban growth witnessed in Bamenda municipality also makes it difficult to fully apply the model as it uses self-modifying rules to prevent such behaviors which are too slow to adequately stimulate the population. The model equally fails to provide adequate procedures that can be used to predict future population growth trends within an urban area. This makes planning insufficient to ensure a sustainable urbanization since future population growth trends cannot be fully predicted

Despite the above criticisms, the model serves as a basis to fully comprehend the problem of rapid population growth leading to urban challenges in Bamenda municipality and the sustainable management strategies that can be put in place to solve this problem. The different types of growth proposed by the model are visible in Bamenda. The spontaneous growth is seen in the population growth in risky area such as Mile 4, Mulang, and Cow Street which were initially less inhibited. The road influenced growth can be seen with the expansion of the town towards Bambui-Bambili, Bali and Bafut as a result of development of road network in those areas.

The different types of data used in the HILT model also make the model highly applicable in Bamenda. Land use data and protected land data all exist in Bamenda municipality and can be seen as initial cells at the start of the simulation as proposed by the model. The slope data associated with each grid cell used to determine the likelihood of urban growth development along hillsides is also highly visible in the town with urban expansion toward hillside such as sisia and Abangoh. Road information is also used to influence urbanization along transportation

corridors like expansion of town towards Bafut, Bali, and Bambui in the study area as proposed in the theory.

Thus the theory sets a basis to better understand the phenomenon of urban challenges in the town which can be curbed by implementing effective management strategies to ensure a sustainable urbanization.

0.9.1.2 The Idea of smart Growth (ISG)

The idea of smart growth was used to describe the response of uncontrolled urban expansion in America. (Reis, 2002). A look at the population census and other market trends showed that the decentralization of economic and residential life remains the dominant growth pattern in the United States (U.S.) (Katz, 2002). Taking into consideration the seriousness of this situation, the ISG was developed to suggest alternative solutions to the problem of rapid growth as it propose the application of sustainable development concept to land-use issues. The idea channeled development to areas of existing infrastructure that consumed less land for roads, houses and commercial buildings. This idea thus means smart management of resources in both growing and declining communities. The ultimate goal of smart growth was to counteract urban challenges which is not different from general solutions forwarded by planners such as;

-limiting outward expansion
-Encouraging higher density development
-Encouraging mixed-use zoning
-Reducing travel by private vehicles
-Revitalizing older areas
-Preserving open space

More modern smart principles required the need to address housing opportunities for middle class and low-income families in the cities and close-in suburbs while creating more affordable housing near job centers. One of the main ideas behind this initiative was that ‘the denser the better’. American planners, organizations and groups claim that there could control urban challenge in some states and proved that smart growth is working after ensuring that local governments comply with these ideas and policies. For example, the Oregon state in the west of the country started taking anti-urban challenges measures 30years ago. Base on a Law passed in 1973, each of Oregons 240 cities is surrounded by an urban Growth Boundary (UGB) which shows where a city is expected to grow and end. Urban services and infrastructure such

as sewers were not to be extended beyond the UGB. The growth boundary could only be modified if the city complied with state-wide planning goals and standards. Another place where the ISG is well known for its implementation was Los Angeles. The idea of smart Growth has been extended on other states of USA and in other countries. It success in other areas ultimately depend on its adaptation to the unique political, cultures, market realities and developmental trends in that area. It should be noted that the ISG can be an effective anti-urban challenge measure in only one-way which is confining more and more people into existing urbanized areas.

The ISG has some limitations. It can be criticized base on the fact that it lays more emphasis on confining more and more people within the existing urban area to solve the problem of urban challenges out of the urban area while neglecting urban challenges that occur within the urban area. For example, it does not take into consideration the haphazard, disorganized and poor occupation of urban space such as marshy and risky zones within the urban centers. Taking the case of Bamenda municipality, urban challenge is not only felt with the expansion of the town into the periphery but also with the expansion of the town into marshy and risky zones such as Mulang, Ngomgham and Cow Street which falls within the urban space. This aspect has been completely neglected by the ISG limiting it applicability in the town of Bamenda.

The ISG can equally be criticized base on the fact that it considers that “the denser the better” without taking into consideration the impact of high population densities. The impact of denser urban areas like high unemployment, high crime wave, limited social facilities, high congestion and pollution which are highly associated with dense urban areas has been highly neglected by the model

However, the ISG set a relevant base in solving the problem of urban challenges in many urban areas especially when fully implemented. Taking the case of Bamenda municipality, one can discover that the extension of the ISG into the town by creating an UGB and ensuring it implementation will help solve the problem of urban challenges into it surrounding peripheries and risky environment. This is because confining urban growth within the UGB will help limit outward expansion of the town into the countryside and into the marshy and hilly areas. This is possible with the fact that, the land tenure system is very evident in Bamenda with some families owning large expanses of land within the town and not willing to give it for urban land uses. There exist available lands within the town in which the urban population can be confined apart from the risky zones.

In addition, by implementing the mixed-use zoning system and by reducing travel of private vehicles within the town will ensure the judicious use of urban resources and limit traffic congestion within the town. Thus the implementation of the ISG in Bamenda town will greatly help in solving the problem of urban challenges as well as ensuring it sustainable growth.

0.9.1.3 The Central Place Theory by Walter Christeller (1933)

The German geographer Walter Christaller introduced central place theory in his book entitled "Central places in southern Germany "(1933). The primary purpose of a settlement or market town, according to central place theory, is the provision of goods and services for the surrounding market area. Such towns are centrally located and may be called central places. Settlements that provide more goods and services than other places are called higher-order central places. Lower-order central places have small market areas and provide goods and services that are purchased more frequently than higher-order goods and services. Higher-order places are more widely distributed and fewer in number than lower-order places

According to Margot Smith, Walter Christaller erred in his development of CPT in 1930 by using size of population and number of telephones in determining the importance of a city, the number of kinds of services offered there was more important as a measure of the importance of a city in attracting consumers. In applying CPT to describe the delivery of medical care in California, smith counted the number of physician specialties to determine the importance of a city in the delivery of medical care.

The CPT has some criticisms or limitation. It can be criticized based on the fact that consumers and sellers are not always rational. Consumers take decisions on social networks and personal biases. For instance, Bamenda being the major town of the North West region, many persons travel from far neighboring towns to buy in Bamenda by passing other towns in the region. This model equally fails in terms of distance as distance in itself doesn't determine consumer purchasing power as good transport networks facilitate movement of customer from one place to another. The construction of roads linking Bamenda to other towns in the region has facilitated movement of goods and people within the region. The construction of the Bamenda-Nkambe Road have facilitated urbanization process in the study area as people now travel without any road obstacle to Bamenda as it the center of attraction in the North West Region despite the fact that other towns also exist In the region. This makes sustainable management difficult since future population trends cannot be predicted.

Also, the idea of higher-order and lower-order central places has made the collection of waste in the study area difficult. The town is saturated with liquid, biodegradable and non-biodegradable waste. Plastics waste are found all over the town because of the existence of so many market in the town. The existence of just one or two market in the town could have facilitated the collection of garbage by the companies involved.

However, the model has some importance which if well implemented, can solve the problem of urbanization challenges. The theory is relevant in the North West region context. The North West region has regional capital with divisional capitals around them. Divisional capitals have towns surrounding them and the towns have villages around them. This shows that if resources are equally distributed within the region and higher institutions are equally allocated in all divisional capitals, people will no longer see the need to migrate to Bamenda for one reason or the other.

With development of model communication and information, the consumers are able to make rational choices. For instance, people in Nkambe can compare the prices of goods on online shopping platforms to see which prices differ in the different market. If the prices in Bamenda are the same with that of Bui Division then the consumer will have no reason traveling all the way to Bamenda.

Thus, the model set a basis for the better understanding of the phenomenon of general laws of interaction of people with towns of different sizes in an ideal geographical situation which can help in setting out good management strategies to ensure sustainable urbanization.

0.9.1.4 The General Theory of Urbanization (lldefons, 1867)

In 1867, with the Industrial Revolution well underway, the engineer lldefons cerda, author of the plan for reform and extension of Barcelona, published has General Theory of Urbanization. It was the first book in history in which the process of designing and building cities was systematically analyzed and feigned as a science

Cerda coined the term urbanization, defined as “the set of principles, doctrines and rules that should be applied so that buildings and their conglomeration, as opposed to constricting, distorting and corrupting the physical moral and intellectual faculties of social humans that can help promote their development and vitally thereby improving individual wellbeing, the sum total of which constitute public property “. Cerda base his expansion proposal on an in-depth socio-statistical study of old Barcelona’s population conditions. The high mortality rates of the working class population and poor health and education conditions pushed Cerda to design a

new type of urban planning, which he defines as “urbanism”. In his proposal for the new city, he planned the location of services such as market places, schools, and hospitals. He bases his contribution on the urban and political preconditions of Barcelona and statistics which was mostly on improving the population living conditions.

He developed a theory about the scientific and modern organization of urban form. His model included the effects of the epoch’s new technology on urban forms: the railroads, streetlights, the telegraph and sewers. In 1854, he did not use the word “expansion” for his plan, he talked instead of the “foundation” for a new city, and regularity was the main feature, with an unlimited geometrical grid of perpendicular intersection in the street. His main objective in implementing the grid form was to avoid privileged zones for social classes and to achieve optimal hygienic density (sola-morales, 1991). His leitmotif was to achieve optimal hygienic living standards of cubic meters per person and room and 40 square meters per person in housing. In Bamenda, one would need 6 cubic meters of atmospheric air per person and per hour in order to breathe correctly. Scientific studies establish a minimum of 40 square meters per person within towns

For Cerda, the possibility of a sustainable improvement of the condition of urban life would involve solving two why: first, how to improve the urban roads, sanitary infrastructure and how municipal equipment could be financed and secondly, how housing prices could be adjusted to different ways (Soria, 1991). The study area is facing totally a different thing as councils do not have a maintenance restoration policy. Moreover, new additional floors are added in the town on daily basis with absolute disregard for the structural design of the buildings. The inner courtyards that Cerda designed as open space do not exist in Bamenda as the town is converted into storage rooms, garage and other facilities

Although the need for services for the population was explicitly stated in the plans proposal, the methodology behind the service pattern was not explained. In the map, the distribution of market and health, education and social services can give a sense of Cerda idea of social equality. To him, urbanism was a tool to diminish the differences in the living condition of the various social classes, particularly in old Barcelona. The population health and education achieved through service provision throughout without an explanatory interpretation. He discourages urban agriculture which is contrary to what towns are doing today. Most towns have developed a different town planning taking into consideration the aspect of smart growth to solve the problem of food insecurity in the urban areas

The general theory of urbanization is important because it was the first book in history in which the process of designing and building cities known as urban planning was systematically analyzed and defined as a science. In it, Cerda linked this process to individual wellbeing and public prosperity. Many towns and cities used this theory to plans and build up their towns including Bamenda although new theories have come up and towns are shifting toward those theories.

0.9.2 Conceptual and Theoritcal Framework of the study

0.9.2.1. Conceptual framework

Despite the existence of urbanization challenges in most urban areas of the world, sustainable urban area can still be achieved in these cities through the effective implementation of sustainable management strategies. Thus in examining the relationship between challenges of urbanization and sustainable management strategies in Bamenda municipality, the concepts of urban challenge, urbanization and sustainable urban management will be analyzed.

0.9.2. Urban Challenge

"The Urban Challenge" was a chapter in the 1987 Brundtland report, *our common future.* The issues remain depressingly familiar for Rio+20. Urbanization has continued around the world, sometimes diminishing rather than enhancing social and environmental capital.

According to geographers, urban challenges includes, affordable housing, urban pollution and inequalities in access to services and amenities. Urban challenge are problems faced by all growing urban areas. This is particularly in developing countries with higher formation of informal or squatter settlements.

According to climate-Kic (2017), urban challenges are problems faced in the urban areas such as inadequate infrastructure, buildings, energy supply, water systems and drainage, sanitation, waste management, housing and mobility. Figure 2 below shows the conceptualization of urban challenges with three main dimensions which are; environmental, socioeconomic, institution and policy framework.

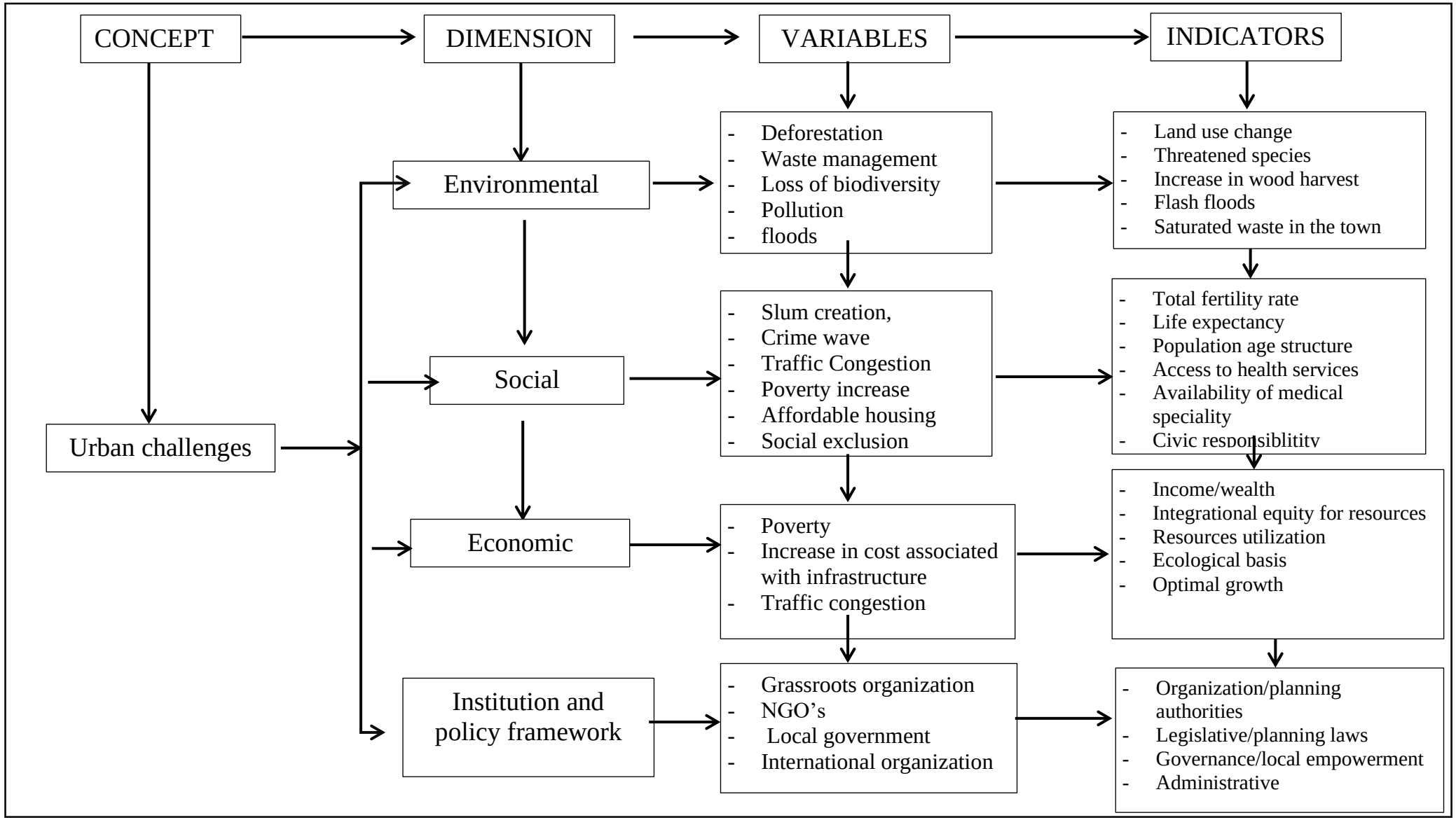


Figure 2: The conceptualization of urban challenge

Source: Author's conception, inspired by a master's II classes

0.9.2.2 Urbanization

Urbanization is the process by which rural communities grow to form cities, or urban centers, and by extension, the growth and expansion of those cities.

According to Karl Marx, urbanization is the natural outcome of the development of the productive forces as well as the launch pad for sustaining that development. Urbanization can also be referred to as the population shift from rural to urban areas, the gradual increase in the proportion of people living in the urban areas, and the ways in which each society adapts to the change. The process whereby a society changes from a rural to an urban way of life (NLM, 2014). According to Cerda, urbanization is the set of principles, doctrines and rules that should be applied so that buildings and their conglomerations, as opposed to constricting, distorting and corrupting the physical, moral and intellectual faculties of social humans, can help promote their development. Urban Sociologists look at Urbanization as the study of the social, political and economic relationship in cities

Urban Geography is a new branch of geography which developed in 20th century for the first time, Mr Karl Massert had given the outline of urban Geography in 1907. Urban geographers look as Urbanization as the movement of the population from rural areas to urban areas. It is essentially the gradually increase in the proportion of people living in urban areas. Geography being the study of physical features of the earth and atmosphere. The term urbanization is complex and to study it under geography, we need to know how the process of urbanization affects the physical enviroment. With an influx of people moving from smaller towns and large cities, making a transition to becoming more industrialized and making room for an increased volume of people and businesses in the city center. Thus, the landscape's physicality is changed in order to accommodate an increased population. This expansion often results in the process known as deforestation, essentially cutting down of trees and other physical features, clearing land to give way to human settlements, land degradation, and climate change, pollution and some natural disasters.

The study investigates challenges of urbanization and sustainable management strategies put in place in relation to these challenges. Urbanization is conceptualized in figure 3. Three major dimensions are given a close look notably the socioeconomic, environmental and institutional with major variables and indicators of change.

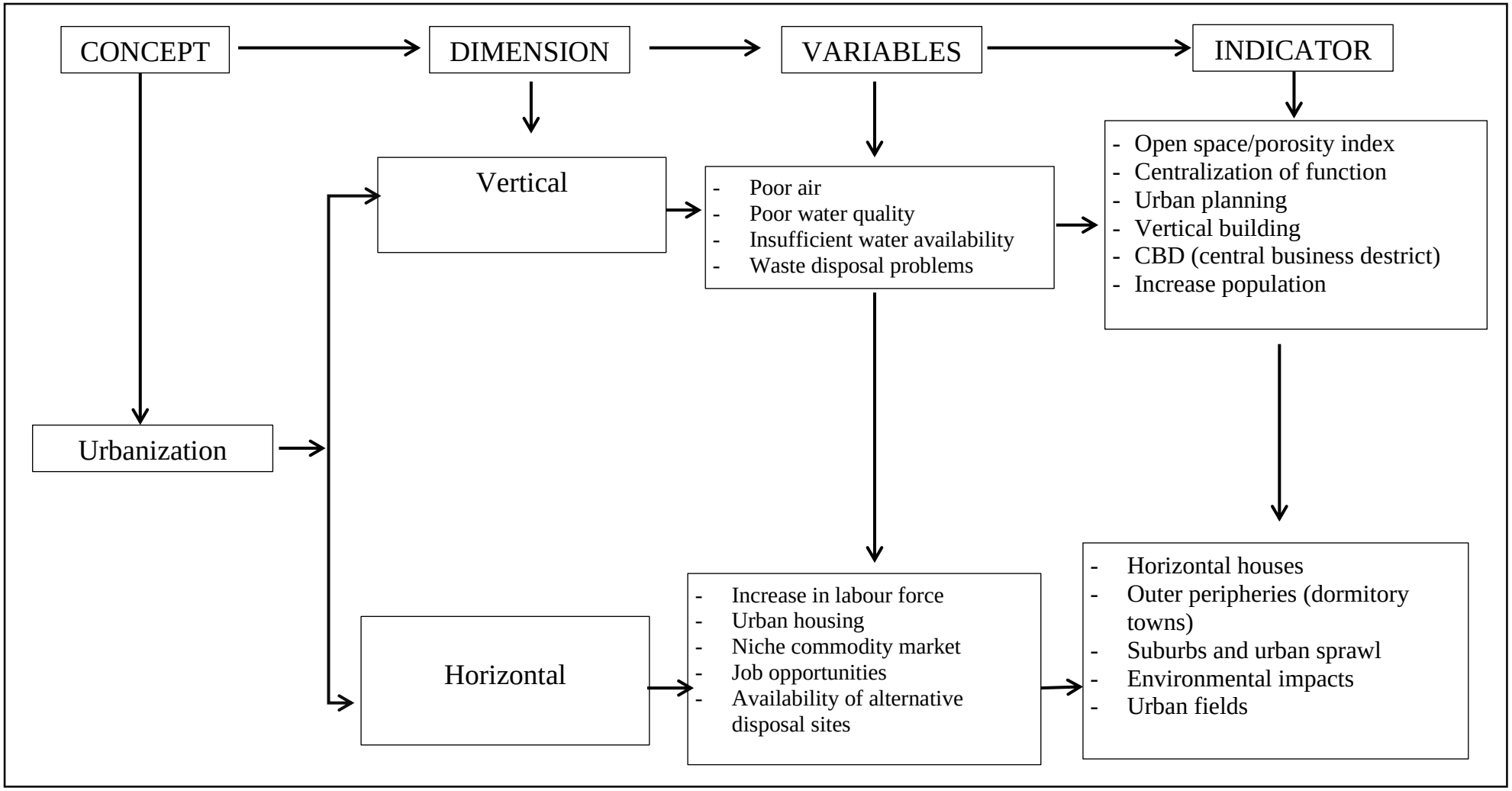


Figure 3: The conceptualization of urbanization
Source: Author's conception, inspired by a master's II classes

0.9.2.3 Sustainable urban management

Sustainable urban management has been defined in various ways with different criteria and emphasis. But its goal is to promote and enable the long-term wellbeing of people and the planet, through efficient use of natural resources and production of waste within a town while simultaneously improving it.

To better apprehend what is mean by sustainable urban management, it is important to first understand what sustainability, sustainable living and management is all about. Sustainability is understood as maintaining the demands of the current population without compromising on the demands of future population while sustainable living is meeting our needs in a way that people in the future can also meet their needs. This huge goal requires attention at the environmental, societal and economic levels.

Management can be defined as achieving the desired goals in an efficient and effective manner through planning, organizing, leading and controlling resources (Davidson, 1997).

According to Davey, sustainable urban management is related to the programs, plans, practices and policies that ensures that the growth of population correspond to access to basic needs such as shelter, employment and infrastructure. Though, such access depends, on private initiatives and enterprise, it is critically affected by public sector policies and functions that only government can perform.

Meine (2006), offers a relatively broad definition. He defines sustainable urban management as an effort to coordinate and integrate public as well as private actions to tackle the major issues the inhabitants of the cities are facing, to make a more complete, equitable and sustainable city.

According to Van et al (2006;p56), sustainable urban management is the coordinated development and execution of comprehensive strategies with the participation and involvement of all relevant urban actors , in order to identify, create and exploit potential for the sustainable development of the city.

From the report of the Cairo conference on general authority for urban planning (2001), sustainable urban Management is a set of public policies that are developed and applied at the local or regional level, and that address a wide range of issues (land use, transportation, housing, development or gentrification, environmental protection and waste management) (figure 4).

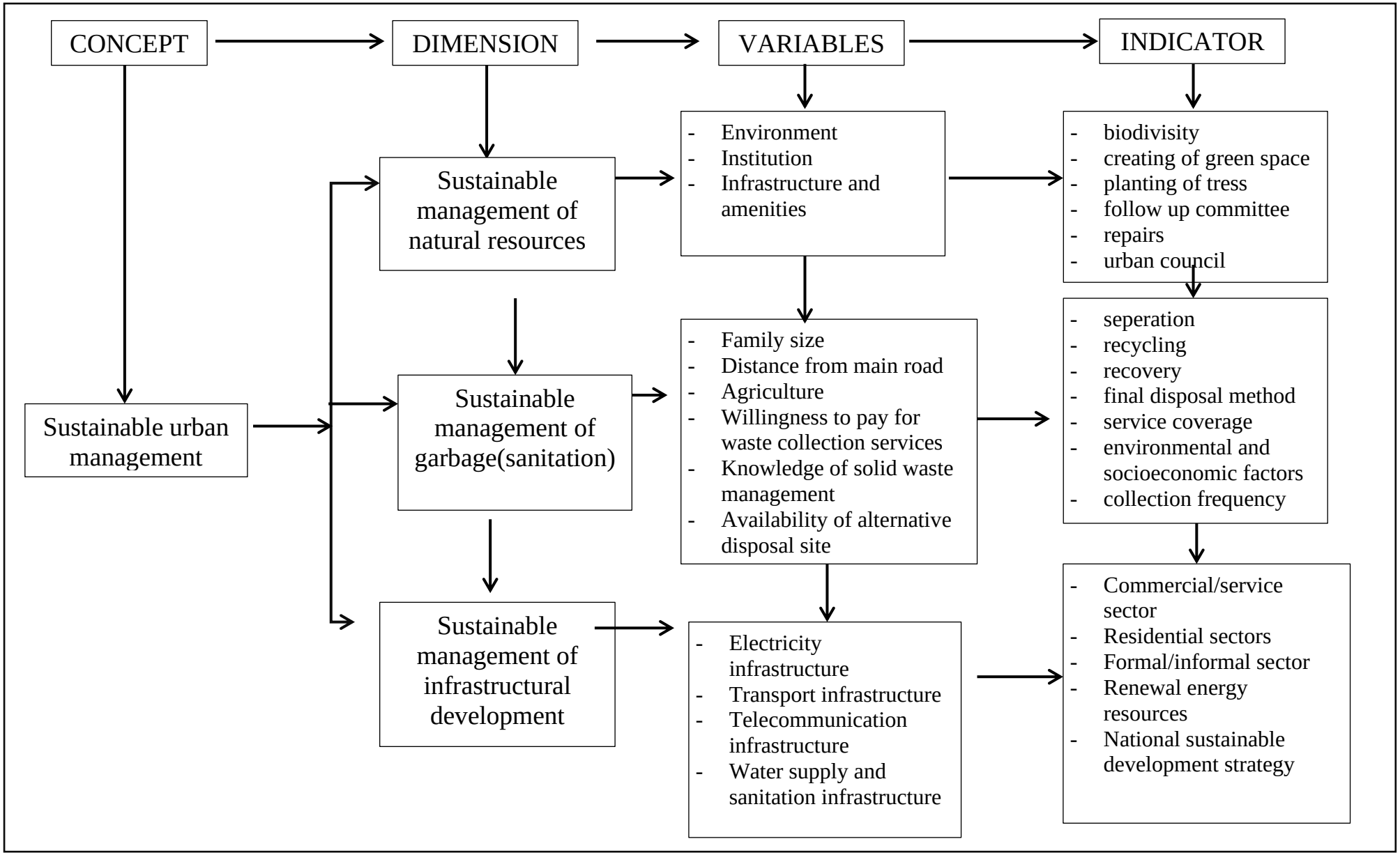


Figure 4: The conceptualization of sustainable urban management

Source: Author's conception, inspired by a master's II classes

0.10 Research methodology

Research methodology involves all the steps taken in data collection, treatment and presentation. The methodology that is used in this work include hypothetic-deductive approach with hypotheses as the point of departure which were subjected to verification. This methodology was structured in three phase that is, data collection, data analysis and data presentation which was aimed at meeting the objectives and hypotheses of the research. Several methods were used to acquire secondary and primary data. A good number of libraries and some archives were consulted to collect secondary information on urbanization challenges which included; libraries of the university of Yaounde 1, the archives of the Bamenda city council and internet websites. The BUCREP office, Ministry of Housing and Urban Development in Bamenda and other related offices and institutions were used to gather more secondary information on urbanization challenges. This gave way for field work to carefully identify and observe the environmental and socioeconomic problems brought by high rate of urbanization in the town of Bamenda. Here, quarter heads, some selected households, stakeholders in the sector, council authorities in Bamenda were contacted and the information collected was either through field observation, administration of questionnaires and granting of interviews.

10.1 Secondary Data

The data that were gotten here were largely qualitative data and was gotten mostly through persusing of documents. This involved the consultation and systematic exploration of textbooks, dissertations, research reports, periodical journals, conference papers, published and unpublished documents on urbanizations challenges and related websites on urbanization problems. Internet materials were downloaded in a flash disk and further exploited. These documents were exploited by analyzing the ideas of different authors and research works on the topic and also making some adjustments and amendments. These consultation were realized from libraries, research institutions and internet exploration. The libraries of the University of Yaounde 1 were used especially those of the faculty of Arts, Letters and Social sciences and departmental library. The purpose was to find out what has already been done in the domain of Urbanization in relation to Challenges and sustainable management strategies to adjust and equally gather more facts in the domain of the research topic. Bamenda City Council plan was consulted to obtain statistics on the evolution of urbanization in Bamenda. The BUCREP office was visited to obtain demographic data of the population of the study area that was used to

design the sample size of the population. All these were done to get information on the challenges of urbanization and sustainable management strategies put in place in the study area.

10.2 Primary Data

This involved data gotten through field work which was largely constituted of quantitative data. This data was gotten from council authorities. Related offices and resource persons were equally contacted. From this visits, information was collected by direct field observations, administration of questionnaires and granting of interviews to the stakeholders. Focus group discussions were used to obtain information on urban problems faced by the people of Bamenda and coping strategies in view of these challenges. In this light, field trips were organized where the first trip was for the familiarization with the field and commencement of data collection. Observation were made and photos taken which help the researcher to do a comparative view between secondary and primary data. The second continued with data collection which took quiet long because of the socio-political crisis in the region. Interviews were administered to government agents like the Government Delegate to the Bamenda City Council and the Divisional Delegate of the Ministry of Housing and Urban Development (MINDHU), head of the council development plan in Bamenda II municipality. These Government agents provided information on the role they play on urban management and the challenges they are facing in implementing the sustainable strategies. This data played a great role in the attainment of the objective of the study.

10.2.1 Direct Field Observation

With regards to field observation, areas with high urban problems were selected for observation like Bamenda-nkwe, Sisia I and II, Mulang and Mbefi. These urban problems identify were; overcrowding, inner city decay, floods, bad roads, landslide, housing shortages, traffic and poor waste management. Field observation was organized in one phase which span through the rainy season in other to better understand the nature of the roads, floods and landslide especially in the Sisia and the swampy areas of Mulang.

During field work, adaptive natures was equally observed especially when there is high intensity of rain and how people living around dustbins areas behave toward overstayed waste.

The following stages were involved in the collection of field data.

Stage 1: Reconnaissance Survey (Meeting with administrators and creation of contacts)

The researcher visited the various administrative centers and created contact with them in other to know the day they would be free for an interview. The administrators visited included; the Government Delegate to the Bamenda City Council, the Regional Delegate of the Ministry of Housing and Urban Development and the Mayor of Bamenda I,II and III municipalities, The quarter head of Sisia. During these visits, permission was obtained from the Bamenda City Council (BCC) and from the quarter head of Sisia to permit the researcher carry out his research. Documents carrying information on secondary data concerning the Master Plan of Bamenda was obtained during the first visit to the Ministry and the document carrying information on council development plan for Bamenda III Council.

Stage 2: Pre-testing of Questionnaires

This stage involved the pre-testing of the questionnaires to ensure their credibility. Ten questionnaires were administered in Mulang and Mbefi which aimed at seeing if the questionnaires will produce the require information and also to make sure that the question were properly understood by the respondents.

Stage 3: Administration of Interviews

Interviews targeted resource persons and related officials that could give an insight of urban problems and measures put in place to solve these problems. With the help of question guide, question were ask to the personnel in charge of Housing and Urban Development at the Bamenda City Council (BCC) on behalf of the Government Delegate of the BCC and Mezam, Divisional Delegate of the ministry of Housing and Urban Development, head of development plan for Bamenda II and III Councils. During these interviews, the research was intended to get information on urban planning strategies put in place by the administration and the level of awareness and implementation of master plan. The responses of this interviews were recorded in a mobile phone.

0.11. The Population of the Study Area

The population of the study area compose of 9 quarters found in the Bamenda municipality. These quarters include; Mulang, Ntamulung, Abangoh Ntangang, Lower Ngomgham, Sisia 1, Sisia 2, Mbefi, Mbesoh, Bameda-nkwe. These 9 quarters regroup a total population of 59161 inhabitants and 10517 households (BUCREP, 2010 population and housing census). The 9 quarters make up the study area which came from the three municipality that is Bamenda I, II and III. (figure 5 and 6). These quarters were group in other to reduce the complicity of tables

to be use in this work. Two were selected from Bamenda I which gave a total population of 11918 inhabitants, three quarters from Bamenda II giving a total population of 33328 inhabitants and five quarter from Bamenda III will with a total population of 13915 inhabitants. Figure 5 below presents the different selected quarters found in Bamenda town arranged in order of municipalities in order to facilitate the study.

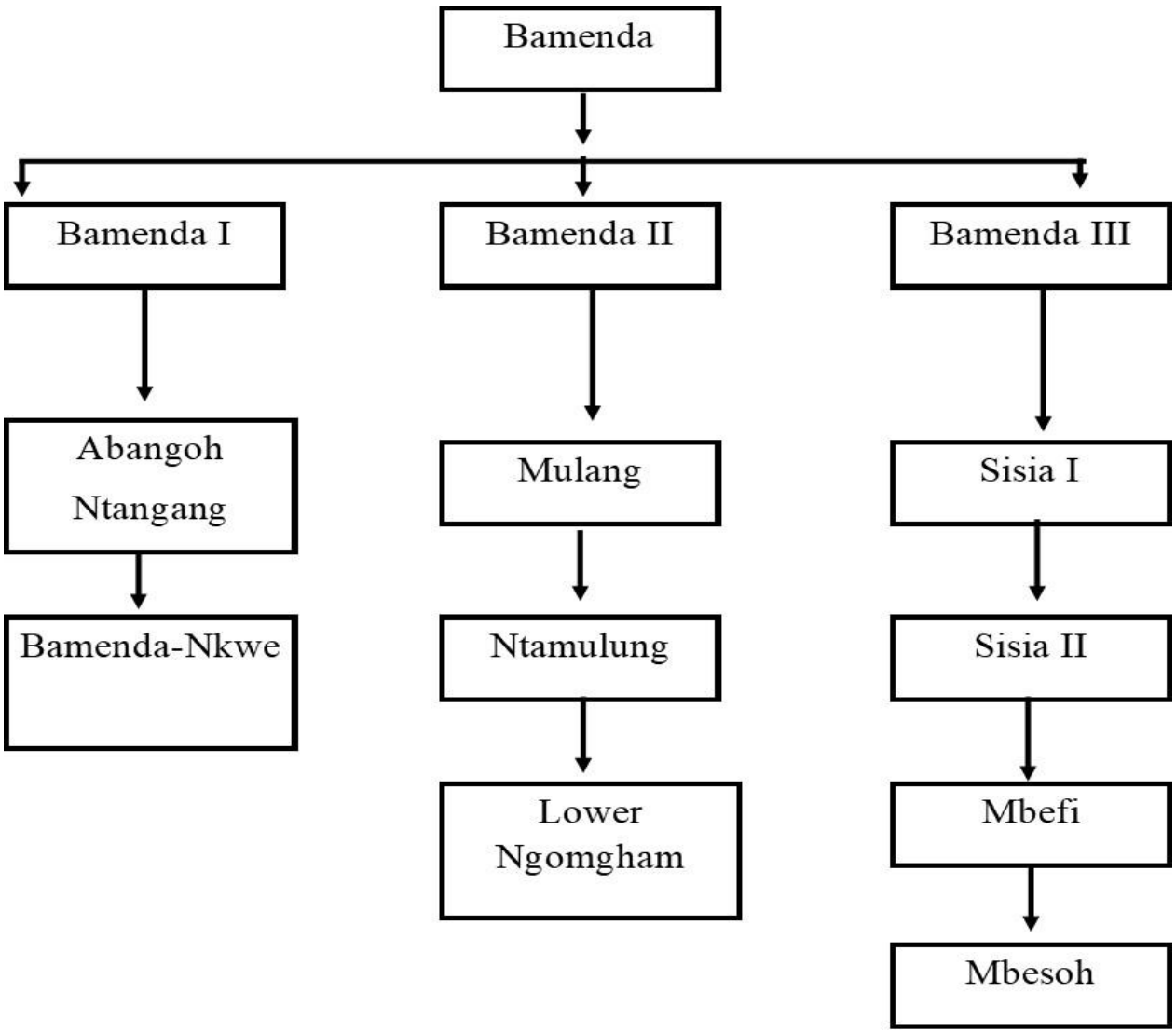


Figure 5: The different selected quarters in the three municipality of Bamenda town.

Source: Adapted and modified from (Mah V, 2010 page 16)

These same quarters found in the municipalities were delimited and specialized in figure 6 for better understanding and comprehension.

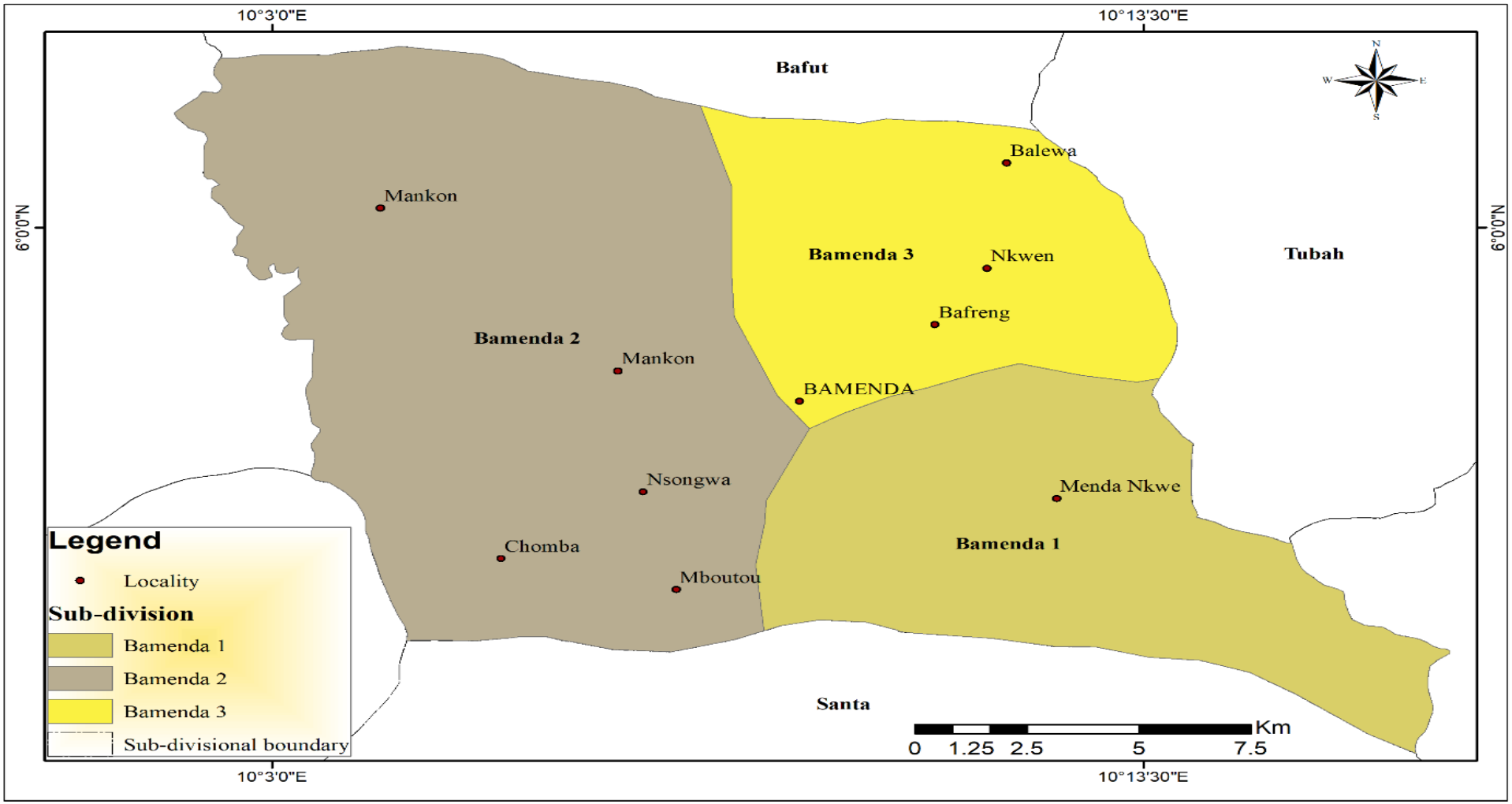


Figure 6: the location of the three municipalities of the study area

Source: NIC and field work; 2023

The 9 quarters in the Bamenda town were grouped into municipalities and quarters population as portrayed in table 2. This table demonstrate the total population in each selected quarter in every municipality and the number of households in each municipality. The total of households in each of the municipality was calculated in order to draw out the intended sample population for the effective administration of the questionnaire.

Table 2: The population of the study area

Number	Quarters	Municipality Names	Quarter population	Total municipality population	Number of households	Total HH Municipality
1	Bamenda-Nkwe	Bamenda I	8729	8729	1262	1776
2	Abangoh Ntangang		3189		514	
3	Mulang	Bamenda II	6848	33328	1073	6230
4	Ntamulung		15847		3268	
5	Lower Ngomgham		10633		1889	
6	Sisia 1	Bamenda III	3116	13915	669	6746
7	Sisia 2		8563		1466	
8	Mbefi		1421		273	
9	Mbesoh		815		108	
Totals			59161	59161	10517	10517

Source: BUCREP, 2010 Population and Housing census. HH=Household

11.1. The sample size of the population of the study area.

The sample size of the population of the study was drawn from the 10517 households in the study area following the 2010 population and household census. The reason for this rational use of households was that, it was much easier to administer questionnaires in households than individuals in the streets and this equally reduce cost and facilitate the work. To this effect, 2% of the households made up the sample population of this study that produce an in miniature cross section of the population.

The reason for choosing a 2% sample size is in accordance with the postulation of Nwana (1982: page 92) which stipulate that:

- If the population of the study is in hundreds, a 40% or more sample should be used,
- If the population is in many hundreds, a 20% will be,

- If the population is in a few thousands, a 10% will do and,
- If the population is in several thousands, a 5% or fewer sample will do (Nwana, 1982, quoted by Mah, 2010)

Furthermore, the 2% is also chosen to ease the work given the fact that the Anglophone zones of Cameroon have been facing and is still facing socio-political crisis and it was not easy to administer questionnaires to a very large population.

The 2% sample size of this study was selected from the total number of households in each municipality using the formula: x* 2/100 where;

X= number of households

*= multiplication sign

2= sample size chosen

From the total number of households, a 2% sample size household was selected. This 2% sample size gave 210 households to which the questionnaires were administered. This sample helped the researcher to know the total number of questionnaires to be taken to the field for effective administration (Table 3).

Table 3: The population of the study area and effective respondents

No	Quarters	Name of Municipalities	HH (Quarters)	Total HH Municipality	2% size	Total sample size	Eff./ Resp.	Total Eff./Resp.	% of Eff./Resp
1	Abangoh ntangang	Bamenda I	514	1776	10	35	8	28	80
2	Bamenda-nkwe		1262		25		20		80
3	Mulang	Bamenda II	1073	6230	21	123	17	92	80.9
4	Ntamulung		3268		65		50		76.9
5	Lower Ngomgham		1889		37		25		67.9
6	Sisia 1	Bamenda III	669	2516	13	49	7	32	53.8
7	Sisia 2		1466		29		18		62
8	Mbefi		273		5		5		100
9	Mbesoh		108		2		2		100
Totals			10517	10517	210	210	152	152	

HH: Household. Eff. Resp. effective respondents

Source: B UCREP, 2010 population and housing census

Table 3 further illustrates the different quarters in the Bamenda municipality, household's totals in the municipalities, sample totals that were drawn from each municipality and each quarter, effective respondents in each municipality and in each quarter. The totals of effective respondents and percentage of those effective respondents are equally illustrated by this table. The table shows that a total of 210 questions were administered in the field but only 152 of them were returned representing 72.38%.

The spatial distribution of questionnaires is represented in figure 7 with 28 questionnaires attributed to the Bamenda I municipality, 92 to the Bamenda II municipality and 32 to the Bamenda III municipality. This proportionate distribution follows the population size and the household totals to each municipality.

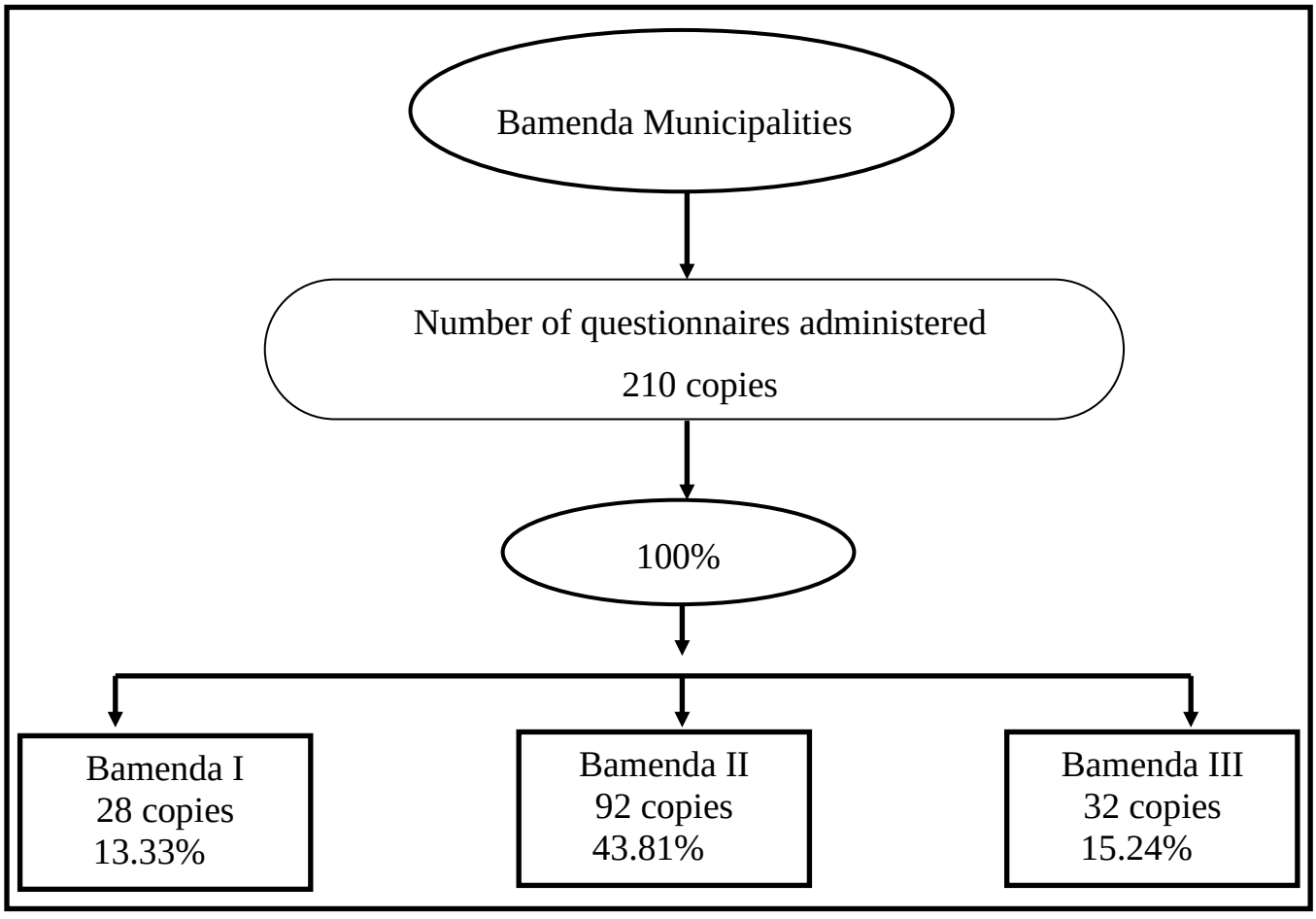


Figure 7: Spatial distribution of effective respondents in the three municipalities

Source: Inspired from table 2

11.2. Administration of Questionnaires

The administration of questionnaires followed a municipality random procedure and a systematic random sample of each municipality whereby household were selected systematically in each municipality for administration of questionnaires. The questionnaire was prepare to draw information on the urbanization challenges and sustainable management strategies in the Bamenda municipality. These included aspects such as; socioeconomic and environmental challenges that comes as result of urbanization and the management strategies that are being put in place. These questionnaires were administered in households which contained single and multiple response questions.

From these research instrument designed to collect data, a synthetic matrix table was conceived to demonstrate the constructive framework in which the work was framed. This was designed from research questions, objectives, hypothesis methods, concepts/theories used to derive the various chapter outlines as view in the table of matrix.

12. Operationalization of variables

A critical look at the research questions, objectives and hypotheses shows that we have dependent and independent variables which needs to be operationalized to help in building of a questionnaire and equally the type of data to be collected.

Hypothesis 1: The ill adapted urbanization process in Bamenda town is negatively affecting the socioeconomic of the urban population in town.

Independent variable: Urbanization

Dependent variable: Negatively affecting the socioeconomic

Table 4: The operationalization of the variables of hypothesis 1

Independent variable	**Indicators**	**Dependent variable**	**Indicators**
Urbanization	- High population - Waste disposal problem - Increase in labour force - Job scarcity - Urban housing problems - Hugh energy - Niche commodity market	Negatively affecting the socioeconomic	- Expensive education - High crime wave - Poverty - Financial hardship - Social exclusion - Job frustration - Inadequate medical facilities - High cost of living

Hypothesis 2: The uncontrolled urban development process in Bamenda is affecting the urban environment negatively

Independent variable: uncontrolled urban development

Dependent variable: affecting the urban environment negatively

Table 5: The operationalization of the variables of hypothesis 2

Independent variable	**Indicators**	**Dependent variable**	**Indicators**
Uncontrolled Urban development	- Poor waste disposal -land pollution - Poor water quality - Loss of biodiversity - Land degradation - Deforestation - Pollution - Poor construction of runoff	Affecting the Urban environment negatively	- Scarcity of potable water - decline in agricultural output - floods - wetland surface changes - saturated waste all over the town - disappearance of animals species

Hypothesis 3: The use of alien urban development norms in Cameroon has rendered the process of urbanization in Bamenda less sustainable.

Independent variable: Use of alien urban development norms

Dependent variables: The process of urbanization is less sustainable

Table 6: The operationalization of the variables of hypothesis 3

Independent variable	**Indicators**	**Dependent variable**	**Indicators**
Use of alien Urban development norms	- narrow roads - poor town planning - urban sprawl - limited involvement of all the stakeholder	The process of urbanization less sustainable	- poor housing condition - poor state of roads - poor construction of runoff - non respect to urban planning laws - inadequate social amenities

12.1. Data treatment, presentation and analysis.

In this research, several types of data were collected and accorded different types of treatment before presentation, analysis and interpretation. These data principally consist of qualitative and quantitative data. The data collected embodied interview data, focus group discussion data, questionnaires data, cartographic data, and observation data. These data was treated differently and presented in the form of graphics, figures and tables

a) Data Presentation

The processed information was presented using frequency tables, graphs, bar and pie charts. Information obtain from interviews was presented in the form of text. Photographic evidence was represented as plates and photos.

b) Data Analysis

The data collected from the field was analyzed using descriptive and inferential statistics. Descriptive statistics was used to summarize participant socio-demographic data and other categorical data while inferential statistics was used to draw conclusions based on the study of the sample population. Satellite images were analyzed using EDRAS IMAGINE 9.1 and ARCGIS 10.1 while pictures and plates were process with Adobe photo shop Cs6. Quantitative and qualitative data was used to evaluate the hypothesis and conclusion were drawn base on the analyzed data.

12.1.1. Analysis of Remotely Sensed Data

a) Preparation of Remotely Sensed Data

The data that was used for land-use analysis involved multi-temporal, multi-spectral and multi-resolution range of landsat imagery from different sensors with the same band combination and different pixel resolutions. The choice of the particular images used was based mainly on the availability of good quality images capable of producing the most desired results. The observation period chosen for land-use analysis was from 1973 to 2023.

The choice of this time periods facilitated a comparative analysis of the land cover and land-use change vis-à-vis urbanization challenges and management strategies. All the satellite images obtained from landsat maps of 1970 and 2023 are put in Tagged Image Format (TIF) which permit them to conserve their geo-referencing characteristics which allow for easy integration into the plate form of the image treatment software. These images were used to examine changes in the face of the town over the years and to see if the changes have caused

more urban problems in terms of socioeconomic and urban environment. This enable the researcher to make an assessment on urbanization challenges and management strategies in Bamenda town.

b) Processing of Remotely Sensed Data

Landsat satellite images were obtained from isolated bands with each having different reflectance corresponding to particular surface features peculiar to each of these bands. They combined into composite multi-band images and treated in a remote sensing plate form for land cover and land use analysis. The shape file of Bamenda was extracted from an existing data base, and overlaid on the mosaic of the four image band and a subset of the image covering Bamenda was created for each of the two reference periods.

An unsupervised classification of each of the images was carried out for spectral discrimination into six classes. A high-resolution satellite image was used to verify this classification. Based on verification, a supervised classification was carried out using the false color composite of the images into four classes of interest in terms of land cover and land use variability and evolution. This classification permitted an appreciation of dynamics in land cover and land use in Bamenda. After classification, the resulting images was exported to ArcGIS 10.2 plate form for layout. This was followed by results and analysis. Many tools and instruments were used in this study which assisted in the collection of data (table 6)

Table 7: Tools Instrument and uses

Tools and instrument	**Uses**
Microsoft word and Excel	To treat qualitative data to obtain graphs
Adobe photo shop	To enhance photos and clear off impurities
ArcGIS (shape files) and Adobe illustrator	To realize maps
GPS	to collect waypoint
A digital camera	To capture phenomena
Questionnaire	To collect quantitative data
Google maps	To collect information on space and to verify settlements and relief maps realized
The eye	It was used to observe phenomena
Appendices	For the clarification of assertions made in the study

The work began with a plan adopted for the reader to have a vivid rundown of the content of the work from general introduction to general conclusion.

Plan of work

The general introduction of this work covers the background to the study, problem statement, delimitation of the study, research questions, objectives, and the hypotheses of the study. The literature review, concepts as well as theories related to the topic are equally examined in the general introduction. This section of the work also carries the research methodology.

Dissertation Chapter Layout

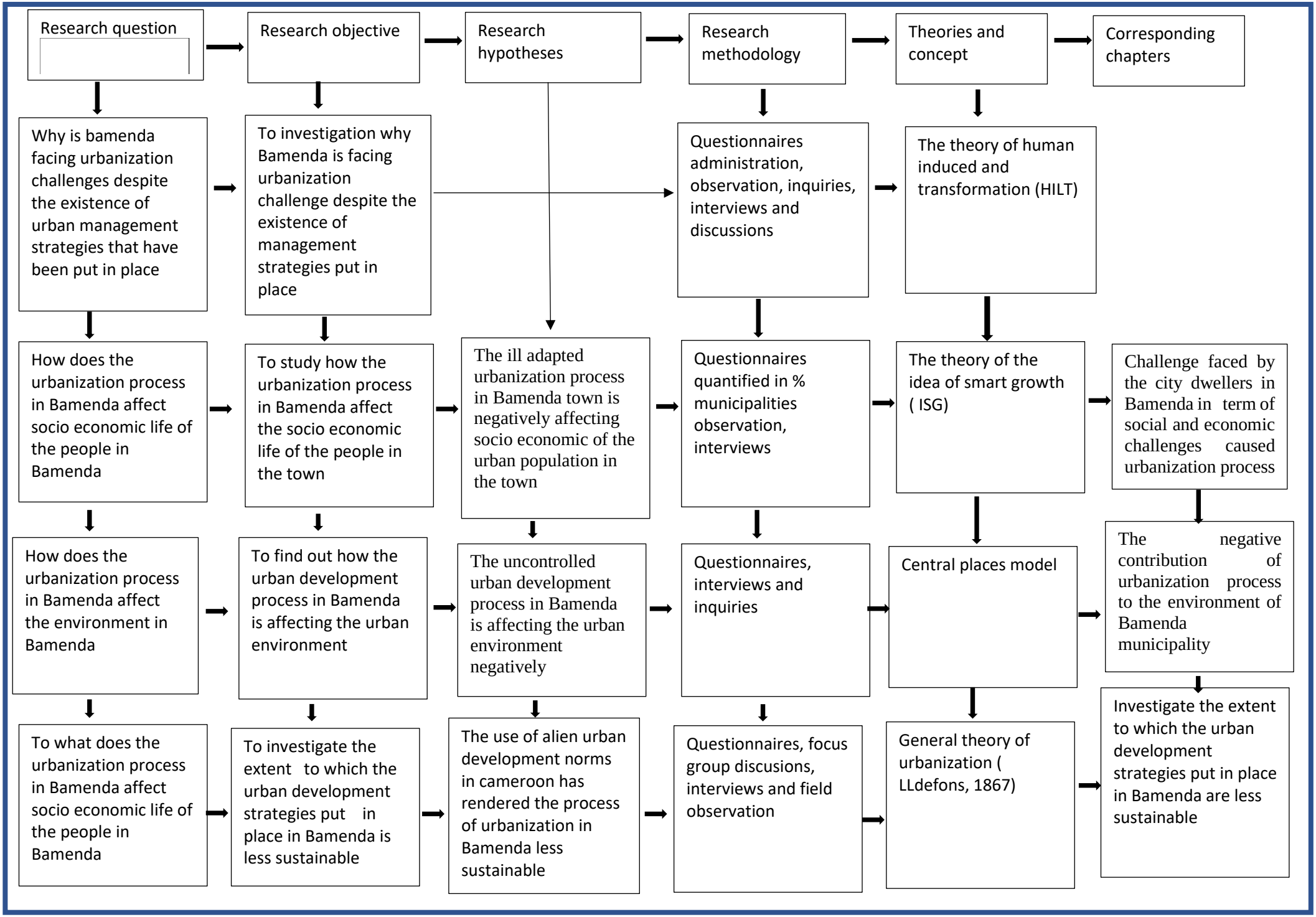
The study embodies three chapters which are further subdivided into sections. These sections includes principally the introduction, discussion of the data presented in the chapter and a conclusion which crowns the chapter. This conclusion simply recaptures and summarizes the main issues raised and discussed in the chapter and introduces the next chapter.

Chapter one focuses on how urbanization process in Bamenda affects the socioeconomic lives of the people. The chapter examines the social $ economic challenges faced by the city dwellers. The main goal of this chapter is to validate hypothesis 1 which states that, ill adapted urbanization process in Bamenda town is negatively affecting the socioeconomic of the urban population in the town.

Chapter two evaluate how the urban development process in Bamenda affects the urban environment. The chapter goes further to verify how urbanization process is contributing negatively to the environment which is in line with hypothesis two which states that the uncontrolled urban development process is affecting the urban environment negatively. This chapter equally brings out the major consequences of this uncontrolled urban development to the environment.

Chapter three investigates the extent to which the urban development strategies put in place in Bamenda are less sustainable. The data collected, presented, analyzed, and interpreted in this chapter helped in the validation of hypothesis three which states that the use of alien urban development norms has rendered the process of urbanization in Bamenda less sustainable.

General conclusion focuses on the verification of hypotheses, summaries of findings, conclusions recommendations.


Research question
Research objective
Research hypotheses
Research methodology
Theories and concept
Corresponding chapters
Why is bamenda facing urbanization challenges despite the existence of urban management strategies that have been put in place
To investigation why Bamenda is facing urbanization challenge despite the existence of management strategies put in place
Questionnaires administration, observation, inquiries, interviews and discussions
The theory of human induced and transformation (HILT)
How does the urbanization process in Bamenda affect socio economic life of the people in Bamenda
To study how the urbanization process in Bamenda affect the socio economic life of the people in the town
The ill adapted urbanization process in Bamenda town is negatively affecting socio economic of the urban population in the town
Questionnaires quantified in % municipalities observation, interviews
The theory of the idea of smart growth (ISG)
Challenge faced by the city dwellers in Bamenda in term of social and economic challenges caused urbanization process
How does the urbanization process in Bamenda affect the environment in Bamenda
To find out how the urban development process in Bamenda is affecting the urban environment
The uncontrolled urban development process in Bamenda is affecting the urban environment negatively
Questionnaires, interviews and inquiries
Central places model
The negative contribution of urbanization process to the environment of Bamenda municipality
To what does the urbanization process in Bamenda affect socio economic life of the people in Bamenda
To investigate the extent to which the urban development strategies put in place in Bamenda is less sustainable
The use of alien urban development norms in cameroon has rendered the process of urbanization in Bamenda less sustainable
Questionnaires, focus group discusions, interviews and field observation
General theory of urbanization (LLdefons, 1867)
Investigate the extent to which the urban development strategies put in place in Bamenda are less sustainable

CHAPTER I

THE SOCIO-ECONOMIC CHALLENGES OF URBANIZATION IN BAMENDA TOWN

1.0. Introduction

Over the years, the town of Bamenda has witnessed a significant change in its size, spatial growth. This change is due to increase urbanization resulting from in-migration and natural increase. This is accompanied by increase pressure on land especially in concentrated places like commercial areas, and other urban centers with the purpose of engaging in economic activities with the end results being urban challenges. Based on the temporal delimitation of this study, four time period showing the evolution of urban challenges have been examined to show how urban challenges have evolved over time. These periods (1973, 1990, 2010 and 2023) were chosen based on the two master plans of the town (1985 and 2012 master plan respectively) that falls within these time periods. This chapter therefore, examines the manifestation of socioeconomic challenges, the spatial evolution of socioeconomic challenges, characteristics, forms and measurement of urban challenges and how these socioeconomic challenges have affected the people over time in the Bamenda municipality.

1.1 Manifestation of Socioeconomic and Spatial Evolution of Urban Challenges in the Bamenda Town

Generally, the world's population is in continuous growth especially that of the developing countries. Cameroon particularly is experiencing rapid population growth especially in urban areas which has implicated urban problems. The urban population was 18% in 1967, 22% in 1976, 40.1% in 1991 and presently, it is estimated at 51.5% (BUCREP,2010). The case of Bamenda town is very peculiar with a very high growth rate. Bamenda has experience spectacular increase in its population for the years. The national census on population and housing of the 1976-1987 in Cameroon revealed that Bamenda was ranked 4th with a 7.8% average annual growth rate amongst town of the 1000 inhabitants and 5th between 1987-2005 with average annual growth rate of 4.9% amongst towns of more 50000 inhabitants (Ngoran, 2013).

As of the moment, Bamenda urban space has a population 269530 people and a surface area of 22.5km2 with population density of 718p/km2 (BUCREP,2010). This high population pressure is attributed to a number of factors which are; high fertility rate, early marriages very

common among teenage (17-18years) who start child bearing at the age of 19years (Nkwemoh, 1999). Family planning education and the use of contraceptive is slow. The culture, custom and tradition of nursing children for wealth and reduction in infant mortality due to improve medical facilities explain this increase in population growth which lead to urban challenges in sub areas and Bamenda municipality as a whole. Table 7 shows the trends of population growth in Bamenda municipality since 1976.

Table 8: Evolution of population in Bamenda urban space between 1976-2005

Municipalities	1976	1987	2005	2030 projection
Bamenda I	3368	7710	18468	38250
Bamenda II	28385	64984	159210	261285
Bamenda III	16358	37448	91852	105244
Total	48111	110142	269530	404778

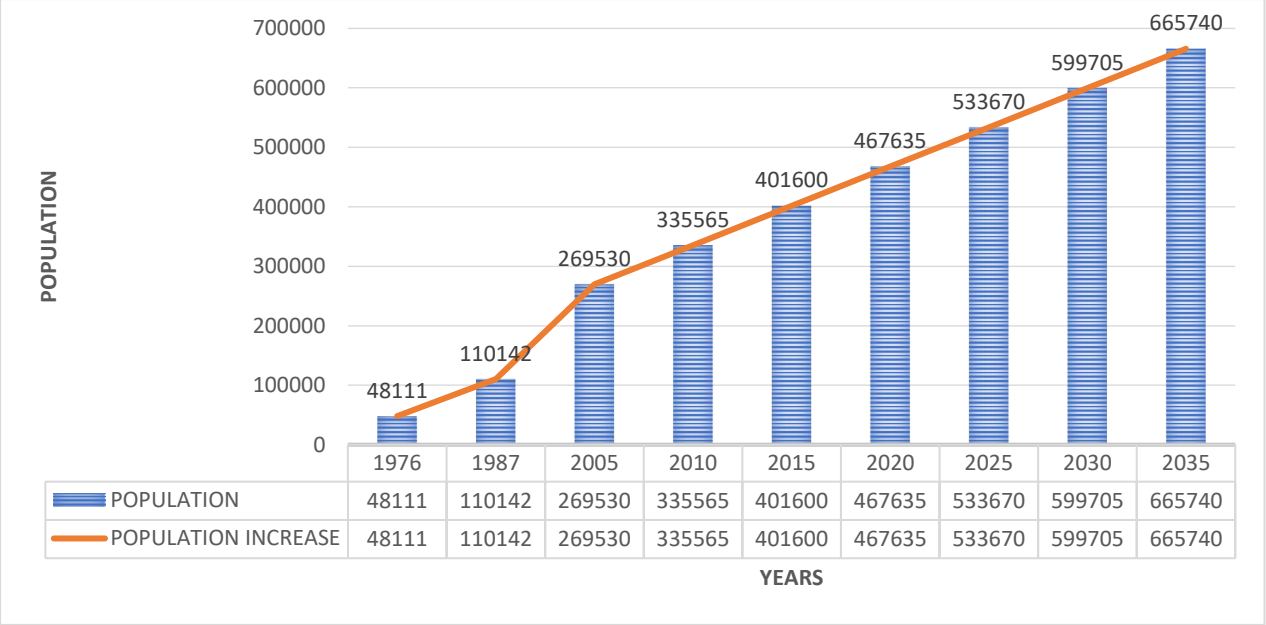
Source: BUCREP, 2005 and 2010 projections

Table 8 shows the evolution of Bamenda population from 1976 to 2005 and 2030 projection. From the table, the increase in population has become a call for concern. Since 1976 a population of about 3368 was registered and within 1987, a population of about 7710 was registered giving a way to the 2005 population of 18468 which we experience a tremendous increase leading to urban challenges and is still projected to increase by the year 2030 to 38468 inhabitants which is a clear indication that urban challenges will also increase if care is not taken.

1.2. Factors Responsible for Urban Challenges in Bamenda from 1973-2023

1.2.1 Population Growth

Rapid population growth in Bamenda due to natural increase and in-migration is seen as one of the factors responsible for urban problems in the town. Results from the first official population and housing census conducted in Cameroon in 1976 revealed that, the population of Bamenda was 48111 inhabitants with an average population growth rate of 7.8%. While the second official population and housing census of 1987 gave Bamenda a population of 110142. According to the results of the 2005 official population and housing census, the population of Bamenda was 269530 with a population growth rate of 4.9% (BUCREP, 2005). Since 2005, no official population and housing census has been conducted in Cameroon and as such, the population can be projected up to 2035 during which Cameroon is expected to emerge based on the 4.9% growth rate as seen in figure 8.



Source: BUCREP 2005 and Population Projection (2005-2035)

Figure 8: Urban Population of Bamenda town from 1976-2035.

Figure 7 shows that, the population of Bamenda town has been on general increase from 48111 to 665740 people with a net population growt (natural increase plus net migration) of 617629 people (665740-48111) between 1976 and 2035. Such a significant increase in population has increased pressure on land, forcing some people especially arrivals to occupy risky zones in a haphazard/uncontrolled manner.

1.2.2 Political Dynamics

The political dynamics in the status of Bamenda from 1973-2023 has also contributed to the increase in urbanization and consequently to urban problems in Bamenda. The change in the status of Cameroon from federal to unitary state through a referendum in 1972 brought great changes in Cameroon and Bamenda in particular. With the creation of the unitary state in 1972, the Bamenda Town Council (Mankon Area council) was changed to Mankon Rural Council. In November 1977, the status of the council was raised to an urban council. This brought significant infrastructural development like roads linking the central business district (CBD) and residential quarters like Musang, Ngomgham, and Azire. This attracted more people into the town leading to urbanization and eventually, the habitation of ecological fragile areas like the hill slops of Sisia and the swamps of Ntamulung (urban problems).

Equally, the presidential Decree of January 2008 which upgraded Bamenda from an urban to a city council contributed to the increase urbanization and subsequently urban problems. This brought significant changes in terms of infrastructural development like roads (the tarring

of the below Foncha-Ngomgham road, Musang-Ngomgham and the extension of pipe born water and electricity to quarters that lacked these facilities (for example Bangshie and Ntahnka). These facilities attracted more population into the town opening flood gate for uncontrolled urban expansion.

Beside the change in the status of the town, the Anglophone crisis that started in 2016 also brought a significant change in the population of Bamenda. This led to an increase in urbanization and eventually urban problems. Prior to the crisis, Bamenda being the head quarter of the northwest region of Cameroon, acted as a receiving town to those that left the interior villages in search of work, educational opportunities. The crisis forced many people from the region to Bamenda due to insecurity. These crisis attracted many people into leading to increase in urbanization. This increase in urbanization resulted to uncontrolled expansion of the town into ecologically fragile areas.

1.2.3 Economic Factor

Commercial activities and to a lesser extent agriculture and light industrial activities have been the major economic activities that have significantly contributed to increase urbanization and urban problems in Bamenda. Bamenda town is the major commercial center of the North West Region. The town had three markets and one shopping center (CBD) in 1985 (1985 Bamenda master plan). Today, there are 7 daily markets (Bamenda Main Market, Nkwen market, Ntarkon market, Bali park market, mile 4 Nkwen Market, Mbengwi Park Market and Mile 8 Mankon market). This has attracted a lot of people who are interested in commercial activities into the town. Apart from commerce, agriculture is carried out in the wetland like Musang, Mulang, and Ngomgham while processing industries include, metal works, soap industry and furniture workshops. Financial institutions like Banks and micro-finance institutions are also common in Bamenda. These activities are population pull factors and as such contribute to urban problems.

1.3. Characteristics of Urban Areas in Bamenda Municipality

1.3.1. Level of Education

A consideration variation in the level of education exists in the study area. This is stratified into 4 groups; uneducated formally, primary education, secondary education and higher education levels (table 9)

Table 9: Education level of respondent in the selected quarters

Municipalities	Quarters	Effective resp.	Sectors of economic activities			
			Primary	Secondary	Higher Edu.	Uneducated
Bamenda I	Abangoh Ntangang	8	2	2	4	0
	Bamenda-nkwe	20	4	10	5	1
Bamenda II	Mulang	17	3	7	7	0
	Lower ngomgham	50	4	11	32	3
	Ntamulung	25	3	13	7	2
Bamenda II	Sisia 1	7	0	4	3	0
	Sisia 2	18	3	5	6	2
	Mbefi	5	0	0	5	0
	Mbesoh	2	1	0	1	0
	Total	152	18	52	65	8
	%		12	34	42.76	5.2

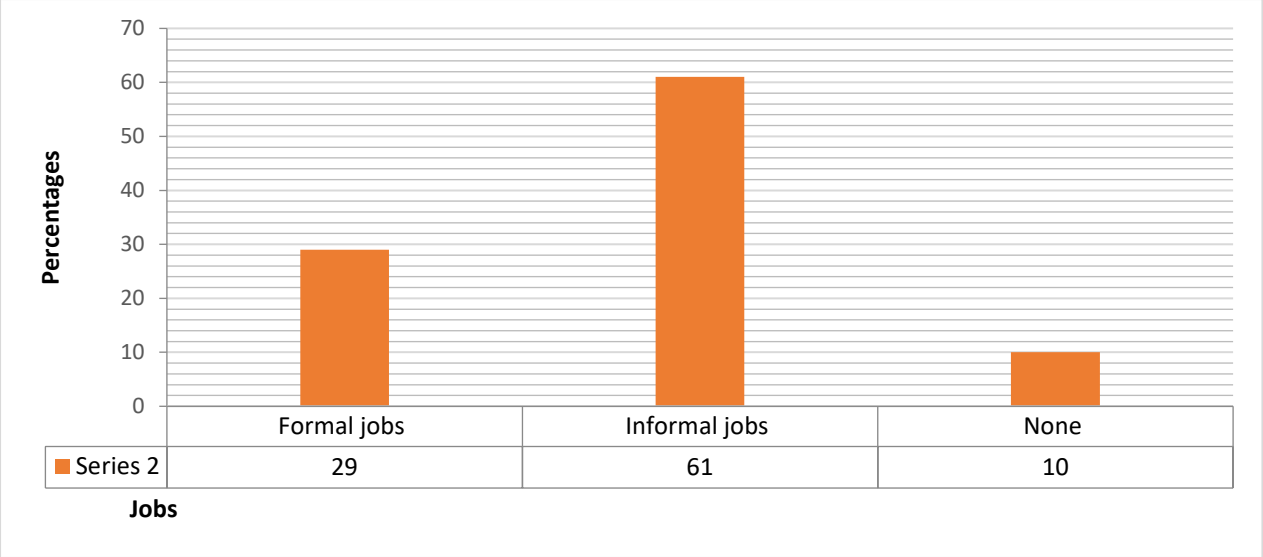
Source: Field work 2023

Table 9: Educational levels of Respondents in the selected quarters

Those who had attended higher education made up a greater proportion of respondents in the selected areas (42.76%) followed by the secondary education level (34%). Such a high proportion of those in the higher and secondary levels can be justified by improvement in literacy level due to increasing creation of private universities and the University of Bamenda and also the creation of many secondary schools in Bamenda today. Uneducated people had the lowest number of respondents (5.2%) followed by primary education (12%). Primary educational level is slightly higher because many people go through primary education in this generation as compared to the past. However, a majority of those with low educational level are more vulnerable to urban problems as was discovered during field work. This is because these people have limited knowledge and poor perception on urban problems. According to many of them, they aid less than 50000frs a month as they mostly work in the informal sector while some practice agriculture especially residents of lower Ngamgham and Abangoh Ntangang.

1.3.2. Formal and Informal jobs

The types of jobs was divided into informal and formal jobs (Figure 10)



Source: Field work, 2023

Figure 9: Cumulative Responses on informal and formal jobs in the selected quarters

A greater proportion of people in the Bamenda municipality do informal jobs (90%) as against 10% who do formal jobs. This is because are limited formal jobs in the town of Bamenda. These people working in the informal sector are considered to be underemployed, Tufoin (2020) writing on motorbikes in Fundong Sub-division, defined underemployment as a condition in which people in a labour force are employed at less than full time or regular jobs or jobs inadequate to their training or economic needs. The same situation can be witnessed in Bamenda town as many youth leave their quarters in the morning to go hawking along major market in Bamenda while others engaged in commercial bike riding as seen in plate 1.

Plate 1: Commercial bike Riders and Hawkers in Bamenda-Nkwe

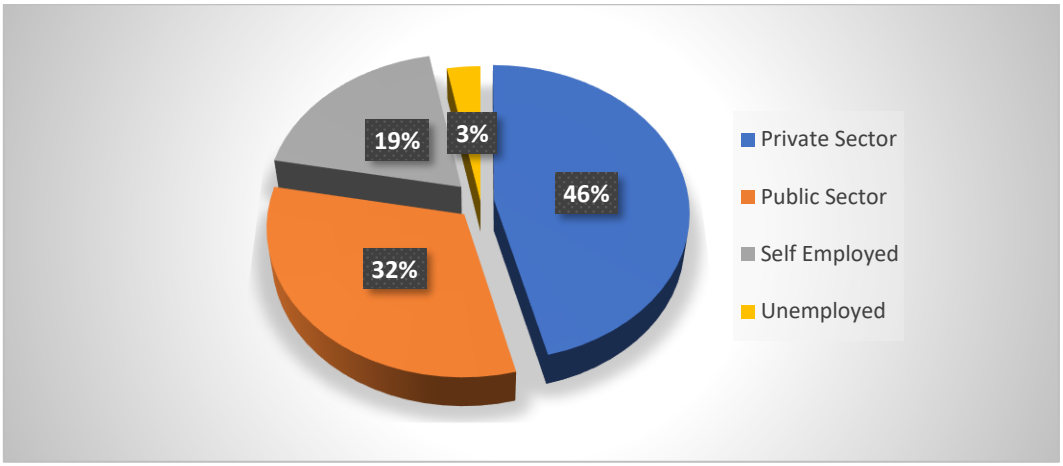
Lukong, 2023

Lukong, 2023

Photo A shows motorbike riders in the Bamenda urban area waiting for customers. Photo B demonstrate how youth are in the street of Bamenda hawking different types of goods. According to field surveys and investigation, it was found out that hawking and motorbike riding create employment to both educated and uneducated young people in the Bamenda municipality. The phenomenon of unemployment in Cameroon keeps increasing paving the way for the proliferation of the informal sector in the country.

1.3.3. Employment rate and sector of employment

Employment was sub-divided into self-employed and unemployed. For those employed, sector of employment was either public sector or private sector (figure 10)



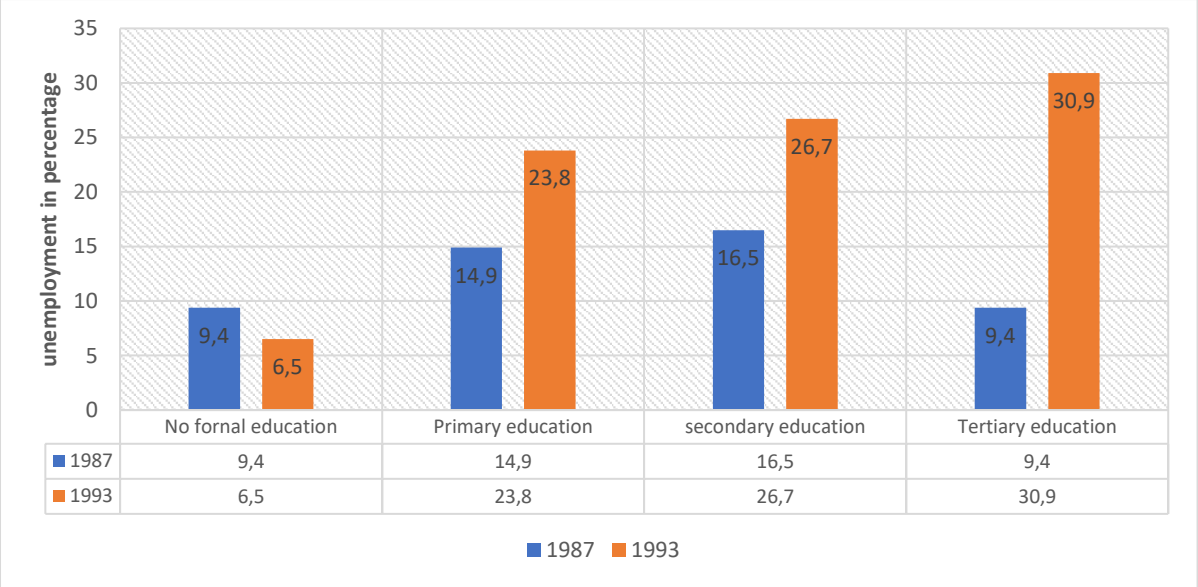
Source: Field work, 2023

Figure 10: cumulative responses on employment rate and sector of employment.

A greater proportion are employed in the private sector (46%) against (32%) in the public sector with just (19%) being self -employed living the number of unemployed at just (3%) .This is because, those who migrate to urban centers have the search for jobs as their paramount objective. However, a majority of those employed are in the private sector (46%) due to limited opportunities and specialized skills. Besides, a majority of inhabitants in these quarters are the working age group and due to low rate of employment in the Cameroon formal sector compared to the private sector reason to why only (32%) of inhabitants in the selected quarters worked in the public sector. Thus, urban challenges in Bamenda is highly witnessed by those in the private sector, those being self-employed and those who are totally unemployed have low income rate. Majority of those in the private sector have secondary education and few having higher education. According to dwellers in Bamenda, they hardly visit the hospital when they are sick and that most of their children end their education at the level of the primary education

and secondary schools. Some even went to the extent of saying that, they were going to parked out of Bamenda if the prices of basic commodities did not reduce. In 2005, unemployment rate was estimated at 15% of the active population compared to 6.7% in the 1987. For the past decades, it has been observed that the level of unemployment rises simultaneously with the level of education (Njie, 2016).

In line with 12 interviews conducted with hawkers, motorbike riders and others in different sectors, 70% of them ascertained that they are underemployment because they have obtained the GCE A/L, Bachelor's Degree and Master Degree which does not permit them to be involved in these types of activities. It is equally observed that the number of young graduates are in a gradual rise in the labour market reason why these type of activities is in a continuous increase. Contrary to the past decades, the actual unemployment rate since 2000 affects more and more degree holders (Kengne, 1991). About 500 Degree holders from higher educational institutions arrives the labour market every year and similar number is offered by secondary education with professional qualification in Cameroon (Njie, 2016). According to Kaffo (2006), when comparing the level of unemployment in Cameroon realized that unemployment has been on continuous increase. This study compared unemployment levels in line with the levels of education from the year 1987 to 1993 (Figure 11).



Source: Computed from statistics presented by Celestine (2006)

Figure 11: Unemployment in Cameroon by educational levels 1987 and 1993

According to the author, the level of unemployment in Cameroon is on continuous increase affecting those within the ages of 15 to 30 years constituting 57% of those seeking for jobs. This falls in line with the study which found out that most people that are unemployed in Bamenda falls within the ages of 15 and 30 which constituted the most of those seeking for jobs.

1.3.4. Bad stage of the road and traffic Jam within the Bamenda Town

Inter-urban transportation is a common phenomenon in the Bamenda municipality. However, the activity is plagued by numerous challenges, ranging from traffic congestion, parking scarcity, car dependency. These problems are mostly common in central areas like Mobile Nkwen and Hospital Round About as presented in table 10.

Table 10: Effective respondents on crowdedness, limited space, traffic jam among others

Municipalities	Quarters	Eff/ Resp.	Socio-economic challenges		Reasons			
			Yes	No	Crowdedness	Limited space	Traffic jam	Others
Bamenda I	Abangoh Ntangang	8	3	5	4	1	3	0
	Bamenda-Nkwe	20	11	9	9	4	6	1
Bamenda II	Mulang	17	8	9	4	7	4	2
	Lower ngomgham	50	38	12	27	11	19	3
	Ntamulung	25	12	13	13	8	2	2
Bamenda II	Sisia 1	7	2	5	3	4	0	0
	Sisia 2	18	10	8	6	11	0	1
	Mbefi	5	3	2	4	1	0	0
	Mbesoh	2	2	0	1	0	1	0
	Total	152	89	63	71	47	35	17
	%		58.6	41.44	46.71	30.92	23	11.81

Source: field data, 2023

As illustrated in table 10, crowdedness contribute greatly to the problem of road network in the Bamenda with largest proportion (56.6%), followed by limited space (30.92%), traffic jam taking 23% and the other taking 11.81%. After so much has been said concerning the poor road network in Bamenda and beyond, one is still hyping on the issues, as road users and car owners continue to cry foul about how they visit the garage more often than the church. The roads have not only turned to sing song but is now a call for concern in order to curb road accident

Below are sample opinions of some individuals at the start of the dry season in Bamenda. A period considered to be dusty given the nature of the road.

“As a road user in the town of Bamenda, considering the state of the roads, it’s by no means favoring us because just to navigate these roads is not easy. Potholes, stones, everywhere dust. This endangers the carat we use, I even frequent the garage than I frequent the church because of bad roads”

“I don’t know if we are evolving with time, look at our era considering globalization and our city roads are as such. It is embarrassing, as a Cameroonian I feel ashamed It’s better to go on foot than use a car. The distance one needs to cover may be inconveniencing because of dust” Emmanuel Tamanji

“I am very disappointed with the type of roads we have. It makes transportation very difficult, be it public or private. I visit the garage frequently because of these bad roads and it cost a lot of money. Health wise, the road produce a lot of dust that makes many sick. I really hope our leaders can do something about these roads. No matter what is happening in town, we deserve good roads.” She states devastatingly.

Below are some plates demonstrating the bad stage of the roads and others showing the various problems caused by this bad roads in the Bamenda municipality.

Plate 2: Bad stage of the road and traffic jam

Source: Photo by M.M. Lukong, 2023

Photo C and D shows the bad stage of the roads in the Bamenda municipality

Photo E and F shows how the people of Bamenda are crowded taking taxis and motorbikes. As demonstrated in the plate E and F, it is clear that people and vehicles are finding it difficult to move because of the bad stage of the road and overcrowding in public places. Plate F also show how waste material have taken half of the road causing traffic jam in the town. It was observed that distances that should be covered in less than 30 minutes are covered for more than an hour because of the bad stage of the roads as seen in the plate C and D above. The road network is an additional source of expenditure to the vehicles users who most often take their vehicles for repairs in the garages daily. This has directly or indirectly increase the cost of living. To make matters worse, the increase in the cost of fuel has influence the living condition of the population and most transporters transfer the increased cost to passengers by increasing transportation fares with disregard to prices given by the government which stands at 300FCFA

during the day and 350FCFA during the night. The absence of parking spaces, poor parking, inappropriate use of pedestrian's pavement and the non-respect of traffic regulation only complicate the situation further as clearly seen in plate E and F above. The road infrastructural development within the city has not been sustainable enough to sustain the economic activities or transportation demands of the growing population. These roads are deplorable in such a way that they have been reduced to patches of tarred surfaces.

According to the respondent's responses, this waste make more than months before those in charge of collection come to collect it. Since the termination of hysacam contract in 2018, the problem of waste in Bamenda municipality have been called for attention has abandoned dump is found all over the town including market places. During an interview with the head of council development for Bamenda II, he made it clear that the city mayor have made matters worse as they are not allowed to collect daily tax from those selling in public places which in return makes them to have limited resources to engage in all activities with the council area which also include dump collection. He went further to say that decentralization have not fully taken place which make the Mayors of Bamenda municipality not to fully execute their yearly projects. To him, the amount of dump in town is a result of limited resources to fully engage in collection. Table 10 below shows the frequency of dump collection in the Bamenda

Table 11: the frequency of dump collection in the Bamenda

Municipalities	**Quarters**	**Effective resp.**	**Frequency of waste collection**			
			Very often	**Hardly**	**Once a week**	**Rarely collects**
Bamenda I	Abangoh Ntangang	8	0	1	2	5
	Bamenda-nkwe	20	3	3	4	10
Bamenda II	Mulang	17	1	2	3	11
	Lower ngomgham	50	2	6	9	32
	Ntamulung	25	2	13	7	3
Bamenda II	Sisia 1	7	0	4	3	0
	Sisia 2	18	2	5	6	3
	Mbefi	5	5	0	0	0
	Mbesoh	2	0	0	1	1
	Total	152	15	34	33	60
	%		9.86	22.4	21.71	39.47

Source: filed work 2023

Table 11 shows the frequency of waste collection within the Bamenda municipality is very low as companies involved attribute only 9.86 effectiveness. Waste stay in the dump sites for weeks, months and rarely collected in some cases. This alone says why the whole town is

saturated with waste material of all categories like liquid and solid waste though the town is mostly dominated by solid waste.

1.3.5. The Challenge of portable water

One resource that has a direct bearing on human community sustenance is water for the multifunctional role it plays in human metabolism and ecological dynamics equilibrium. Water development should make it readily available in too much or little amount. The western high lava plateau is reported to be a high population cluster and one of the highest population density areas in Cameroon since independence in the 1960s for reasons of a long dating civilization and soil fertility among others. Most Cameroonian towns are only faced with water scarcity especially during the dry season with Bamenda Municipality not being an exception. According to field investigation, the issue of water crisis became worst in the Bamenda municipality when the Anglophone crisis took a different dimension in 2018. Because of this crisis, so many water projects and water catchment were abandoned. During an interview with the head of urban development in Bamenda II, he made it clear that the council was building a water catchment in Mankon that could supplied the whole of Bamenda with water but because of the crisis, the project was abandoned. Below are some plate of abandoned water catchment in Bamenda.

Plate 3: Abandone Taps and catchment

Source: photo by M.M. Lukong, 2023

Photo G, H and I shows the abandoned water projects in the Bamenda municipality. This had led to a serious problem of water shortage within the council areas. People now trek long distances in the early hours of the morning in search of water resources. Many go to the extent of digging forage in their homes to supplied them with water. The photo below show a stream arrange by the people of sisia so it can served as portable water.

Source: Photo by M.M. Lukong, 2023

Photo 1: Stream in Sisia serving as Portable water

This stream as served as a source of portable water for many people in the sisia locality for many years now as confirmed by one of the resident of the quarter.

1.3.6. Conclusion

Hypothesis 1 states that "ill adapted urbanization process in Bamenda town is negatively affecting the socioeconomic life of the urban population in the town". To verify this hypothesis, data from respondent's awareness on the determinant of urban growth in the Bamenda municipality were analysed. This was to determined whether socioeconomic challenges in the municipality are being caused by rapid population growth or whether other factors are involved in this urban challenges.

Further findings revealed that, urban problems are not only caused by rapid population growth in the Bamenda municipality but other factors are also involved. The outcome of the data collected, treated, analysed and interpreted revealed that rural-urban migration are the main determinants of urban growth which led to urban problems in the Bamenda municipality with

the percentage of 62%, political factors with 15% and commercial factors with 23%. A majority of respondents with 83% responded positively that there is serious urbanization challenges in the Bamenda municipality. Also, 9% of the respondent did not even accept the phenomenon to be existing in reality and 8% of them did not answer anything or decide anything for their personal reasons best known to them.

Moreover, characteristics of these socioeconomic problems in the Bamenda urban area was also discuss and how the urban dwellers are perceiving these problems as seen in the tables, figures, plates and photos. The next chapter focusses on the Environmental challenges of urbanization in the Bamenda municipality.

CHAPTER 2

ENVIRONMENTAL CHALLENGES OF URBANIZATION IN BAMENDA TOWN

2.0. Introduction

The urban development trend in Bamenda municipality has witnessed significant changes in its land cover/land use from 1973 to present. These changes have been masterminded by anthropogenic activities borne by urbanization. That is why Priso (2014) noted that, the evolution of urban planning in Cameroon until the early 2000s was characterized by obvious misunderstanding in the implementation, with the end results being uncontrolled development of urban areas. Urbanization is a phenomenon that affects many countries of the sub-Saharan Africa. In Bamenda Municipality, urbanization has greatly affected the natural environment such as the forest, the vegetation and the water bodies. This chapter focuses on the effects of urbanization in the natural environment of Bamenda municipality. In a bid to verify this, the specific research question which state; How does the urbanization process in Bamenda affect the environment of Bamenda will be seen in this chapter. It is based on this premise that, the evolution of Bamenda municipality in relation to urbanization challenges was examined within four time periods: 1973, 1988, 2003 and 2023. Within these periods, the land cover/land use maps of 1988 corresponding to the first master plan (1985) of the town and 2015 corresponding to the second master plan of the town were examined and analyzed to further investigate and show the manifestation of urbanization challenges in the Bamenda municipality.

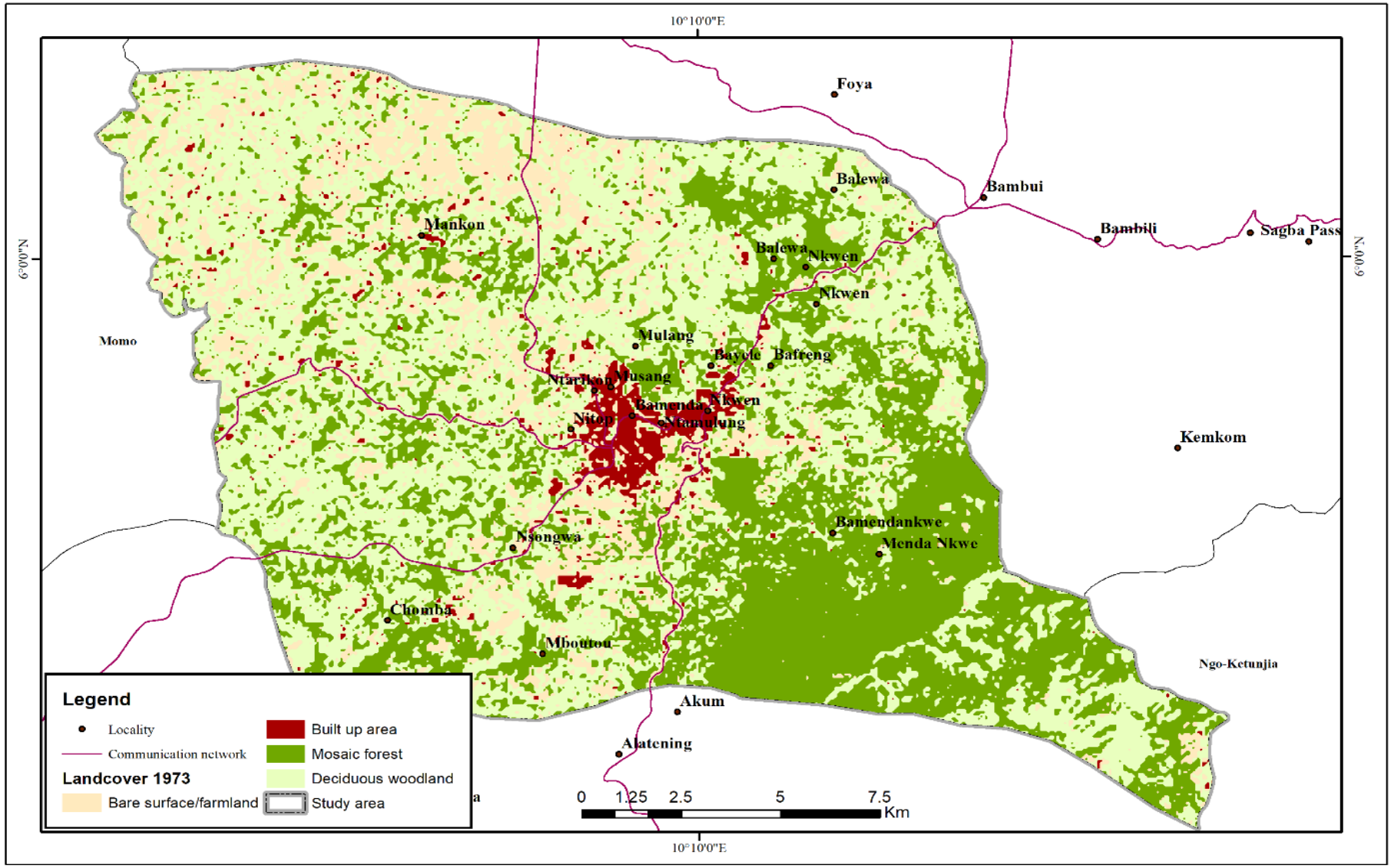
2.1. Evaluation of Environmental Challenges in Bamenda Town

The 1970s in the Bamenda municipality was seen to be a period with a spectacular increase in population as a result of the increase trend in migration from surrounding rural areas. The presidential Degree No: 77/203 on the 29/06/1977 converted Bamenda in to a municipal council (Bamenda master plan, 1985) and later the capital of the northwest province. Due to the central location of Bamenda, she became the Headquarter of the northwest region of Cameroon, the socioeconomic nerve-wire, the pivot to major political, religious and cultural happening in Cameroon Pinson (2010).

The oil production that began in 1978 in Cameroon acted as an engine of economic growth Priso (2011). This led to high expenditure on civil services, subsidies to inefficient enterprises, low return and capital-intensive investment in the 1990s (world, 1995). This played a paramount role in growth of the Bamenda municipality as she experience enormous

construction works from the period of the economic boom, which allowed revamping of roads over the municipality and national territory.

The double visit of the president of the republic of Cameroon to Bamenda in 1984 led to the significant growth and development, with improvement in the state of social infrastructure and services Priso (2011). Major quarter roads in Bamenda Municipality such as Ntache, Muyu quarter, Kumbele were open. Also, the main road that lead out of town (Bamenda-Baffousam) was tarred in 1977. The construction of roads brought about rapid urban growth in the Bamenda municipality, couple with the inadequate social amenities in other surrounding towns and villages like power supply failures, poor health services, deplorable roads condition and inadequate educational facilities forced people to move out of such depressed areas into Bamenda municipality. During this period, social facilities developed such as opening of many enjoyment spot like bars, night clubs in Bamenda municipality. This spots especially bars acted as resting points to most migrants moving to the coast or coming back from the coastal areas. This attracted many people in the area and some ended up setlling around the Abangoh central and Bamendankwe. Also, the arrival of missionary bodies further increase the place of growth in the Bamenda municipality. These missionaries opened churches, schools and hospitals which attracted many Christians and workers into the area. Satellite images for 1973 were downloaded and a land use/land cover map was produced using GIS packages as shown on figure 6.



Source: landsat (1973) Google map NIC, Google Earth images and Field work, 2023

Figure 12: land use and land cover situation in the Bamenda municipality for 1973

Table 12 shows the area of the different land use/land cover patterns in 1973 (bare surface/farmland, built up area, woodland savanna, mosaic forest) in kilometers square and in percentage in the Bamenda municipality

Table 12: land use and land cover situation of 1973 in the Bamenda municipality

Class name	Surface area in km2	Percentage(%) coverage
Bare surface/farmland	16612	9.0
Built up area	2466	1.3
Woodland savanna	83097	44.9
Mosaic forest	83062	44.8

Source: Data derived from the LULC map of the Bamenda municipality in 1973

Despite the improvement in road network in Bamenda municipality, economic crisis that hit Cameroon in the late 1980s was accompanied by a negative growth rate of 3% to 4%. The government had to apply very strict budgetary policies which led to the reduction in public invest on social infrastructure and facilities. In 1993, there was a 70% reduction in the salaries of public servants which was escalated by the 50% devaluation of the CFAF in January 1994, thereby increasing the rate of inflation in the Bamenda municipality. This was followed by the closure of restructured, semi-public and private enterprises, retirement and layoff staffs Priso (2011). This led to law on housing development and high expenditure on consumer goods, in addition, this resulted in a sharp increase in urban poverty pushing a large proportion of the population to unauthorized location such as steep slopes (Abangoh and Bamenda escarpment).

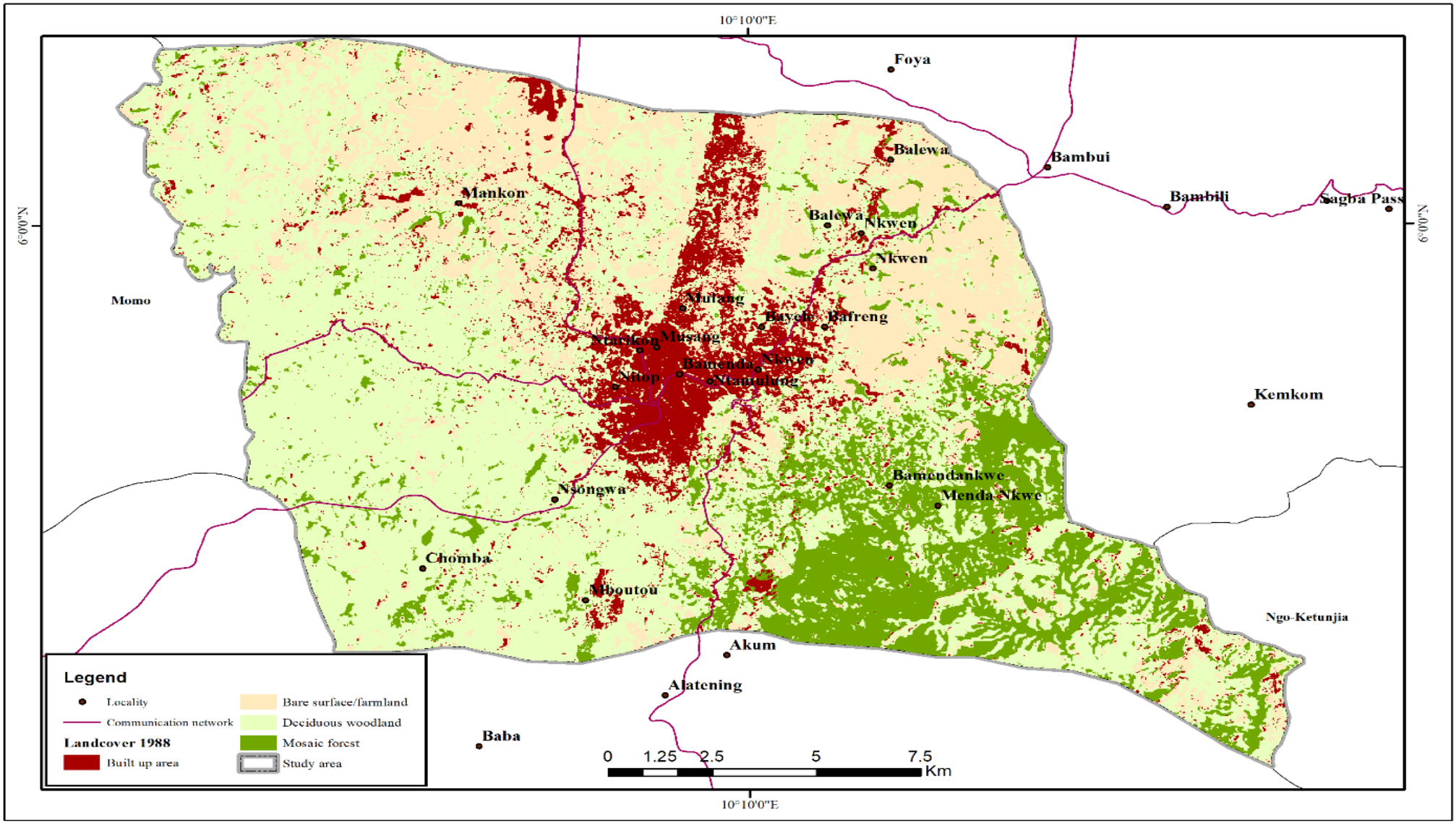
The structural adjustment plan (SAP) was instituted to stabilize the economic situation of the country. This denotes states recession from the provision of social amities, the retrenchment of workers and salary slash. This led to a fall in real income and swerved the attention of the government and individuals from housing construction and maintenance of most of the infrastructure built before and after independence. Hence, the town was deprived of basic infrastructure and the deterioration of existing ones. This resulted in increased poverty associated with poor housing conditions and environmental deterioration. This situation spontaneous settlement by low income earners on steep slopes neighborhood such Abangoh and Sisia with accompanied consequences.

This situation compelled the planning authorities to draw up the first master plan of Bamenda in 1985. The master plan was aimed at organizing and planning housing and social

economic and cultural activities, monitoring and controlling land use and eliminating incompatible land uses (Sule,2005) in the town. This was due to the fact that a lot of valuable time which could have been use to by authorities in arranging the town was spent on trying to revamp Cameroon economy affected by the economic crisis, thereby. Worsening the housing situation in the Bamenda municipality.

2.2. Spatial Evolution of Bamenda urban space in 1988

By the year 1988, Bamenda municipality expanded significantly, its engulfed the fringe and extensive marginal lands such as the steep slopes located at Abangoh, Nta'afi, Achichum. The steep slopes of the Bamenda 1 escarpment was also haphazardly colonized for housing development and agriculture without taking into account the fragile nature of the slope. This was compounded by the continuous rural-urban migration in to Bamenda municipality which served as a commercial and administrative area in the Northwest Region of Cameroon. The socioeconomic and political changes experienced in the Bamenda municipality resulted in increased demand for housing and social infrastructure. Satellite imageries for 1988 were downloaded and land use and land cover map was produced using GIS package as shown in figure 7.



Source: landsat (1988) Google map NIC, Google Earth and Field work (2023)

Figure 13: land use and land cover situation in Bamenda municipality for 1988

Table 13 present the surface area covered by the different LULC situation in 1988 (Bare surface/farmland, Built up area, Deciduous woodland, Mosaic forest) in kilometer square in the Bamenda municipality.

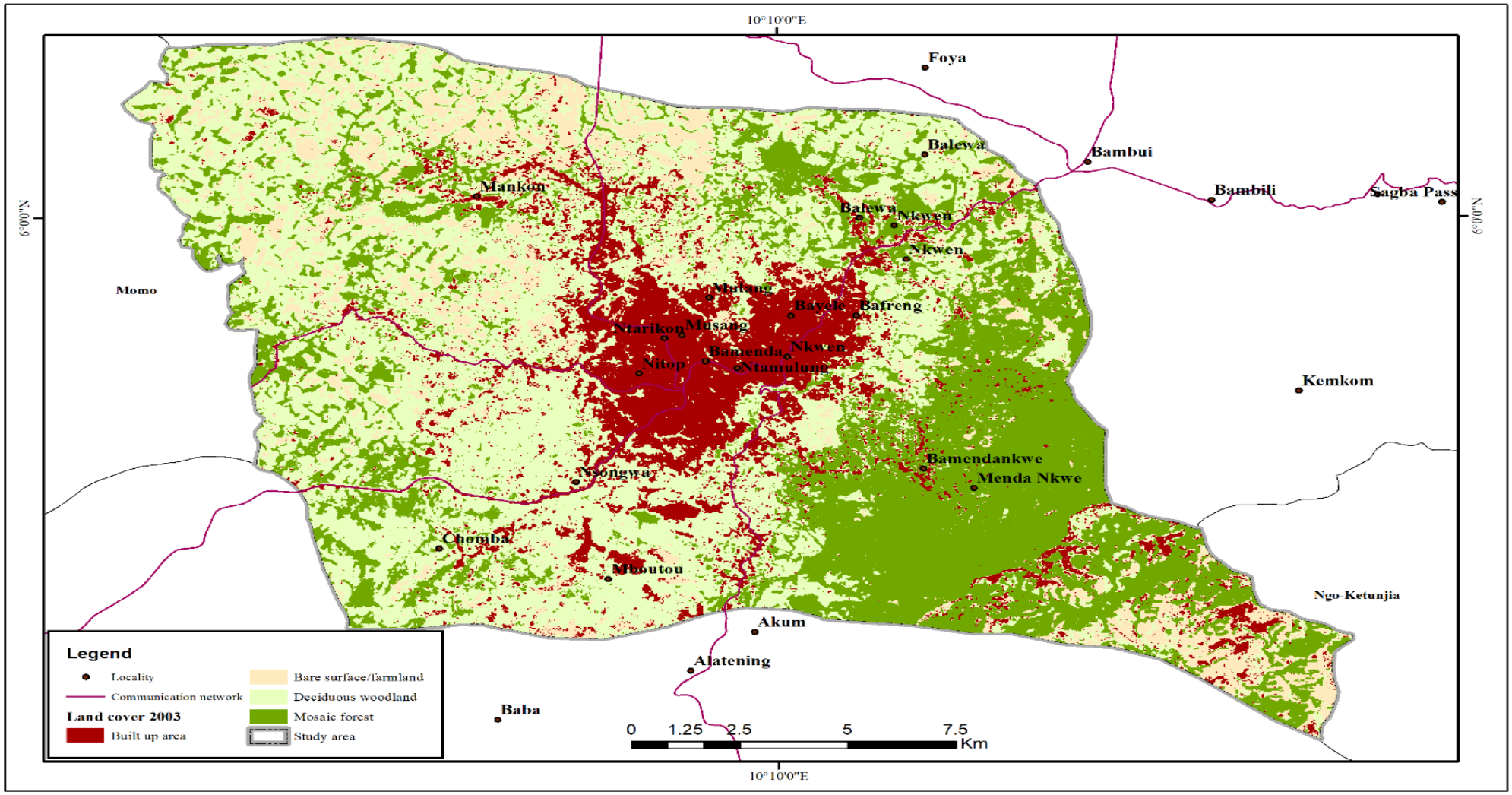
Table 13: land use and cover situation of 1988 in the Bamenda municipality

Class Name	Surface area in km2
Bare surface/farmland	35731
Built up area	9515
Deciduous woodland	96766
Mosaic forest	43226

Source: Data derived from the LULC map of Bamenda municipality in 1988

2.3. Vertical Evolution of the Bamenda municipality urban in 2003

According to the results from the Bamenda city council report of 2015, the population of Bamenda increased from 203,480 in 1987 to 427,149 inhabitants in the early 2000s that is from 2000 to 2005. Furthermore, the report indicates that 18.6% of the population of the North West Region lived in Bamenda within this period with 28359 inhabitants while at the national level, Bamenda had 1.8% of the population of Cameroon. The presidential degree No 2008/021 of 17th January 2008 changed the status of Bamenda by creating the Bamenda city council (BCC), thereby dividing Bamenda into three sub-divisional council areas, here referred to as Bamenda I, Bamenda II, and Bamenda III (Bamenda Master Plan, 2012). With this, Bamenda consolidated multiple administrative functions as Divisional capital, Sub-divisional capital and Regional Capital of the North West Region which acted as a pulling force, attracting many people to work in Bamenda municipality and render services especially with the creation of several schools ranging from primary, secondary to university level which contributed in swelling up the population of the Bamenda municipality, implying an increase in demand for housing. This period witnessed dramatic changes in infrastructure such as schools, pharmacies, churches among other services. Also, educational institution like government secondary school, primary and Nursery among others attracted many students and pupils. All these services acted as a driving forces that resulted in dramatic growth in the neighborhood and increased the demand for housing in the Bamenda municipality. Satellite imageries for 2003 were downloaded and a land use and land cover map was produced using GIS package as shown on figure 13.



Source: Landsat (2003) Google map NIC, Google Earth images and field work (2003)

Figure 14: land use and cover situation in the Bamenda municipality for 2003

Table 14: land use and cover situation of 2003 in the Bamenda municipality

Class name	Surface area in km2
Bare surface/farmland	17328
Built-up area	13008
Deciduous woodland	82397
Mosaic forest	71611

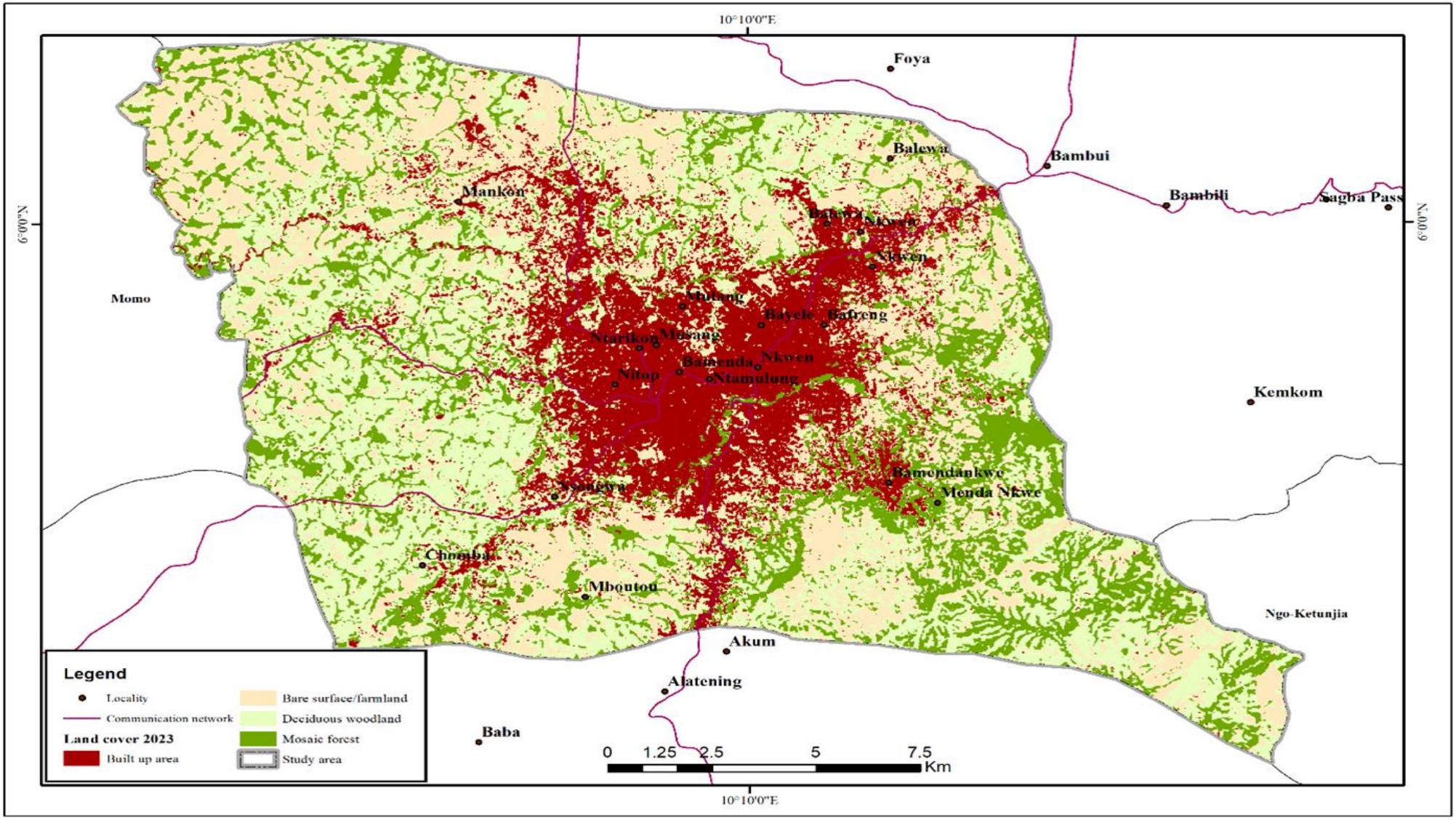
Source: Data derived from LULC map of the Bamenda municipality 2003

2.4. Spatial Evolution of Bamenda municipal urban space in 2023

The period between 2003 and 2023 witnessed significant horizontal growth due to the presidential Decree transforming Bamenda into a city council Priso (2012). This decentralization of function increased centralization of services in the city. The sub-divisional councils were given powers and finances to carry out development projects in their council areas that led to spatial expansion of the town . This period witnessed an increase in population, tremendous changes in the land uses cropping up. Built-up areas have increased rapidly to meet the need of the rising population. There has been the proliferation of so many schools, hospitals, churches, banks among other services as shown on the map. This development has facilitated the expansion of the town from the center towards the urban fringes. The periods saw the increase in land values especially within the urban space resulting in spatial expansion and intensification of land uses. This frayed the urban fabric and increased pressure on land, far more than the case in the early 1973 and 1988. As a result, the new arrivals, especially the poor displaced by housing market have little alternative than to occupy marginal areas (along river bank, hilly slopes and swampy areas) where rent and land prices are relatively cheap as shown in plate 4 below. Satellite imageries for 2023 were downloaded and a land use and land cover map was produced using GIS package as shown in figure 14.

Plate 4: Constructions along River channels and Hilly areas

Source: photo by M.M Lukong, 2023



Source : Land satelite (2023) google map NIC, google earth images and field survey 2023.

Figure 16: Land use and Land cover situation in the Bamenda Municipality for 2023

Table 15 shows the surface area of the different LULC patterns in 2023 (Bare surface/farmland, Built up area, Deciduous woodland, Mosaic forest) in kilometers square in the Bamenda municipality.

Table 15: land use and land cover situation in 2023 in the Bamenda municipality

Class Name	Surface area in km2
Bare surface/farmland	45521
Built-up area	13901
Deciduous woodland	67021
Mosaic forest	59688

Source: Data derived from the LULC map of the Bamenda municipality in 2023

2.4.1. Land use and land cover changes from 1973, 1988, 2003 and 2023

The Bamenda municipality has undergone remarkable changes in its land use and land cover situation over time and space. The statistics generated from the four time periods according to the land use and land cover patterns and changes revealed both positive and negative changes in land use and land cover patterns in the Bamenda municipality as shown in table 16.

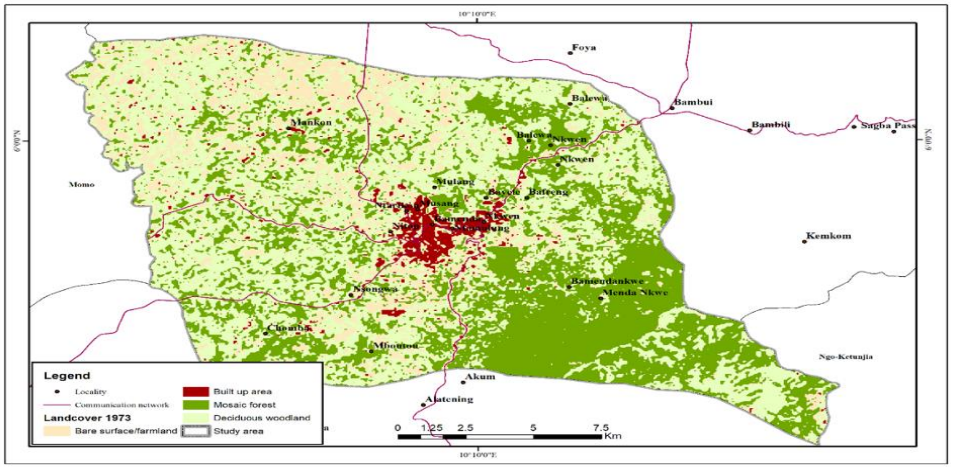
Table 16: land use/land cover situation in the Bamenda municipality for 1973, 1988, 2003 and 2023

Surface area	1973		1988		2003		2023	
	Area in km2	Area in %	Area in km2	Area in %	Area in km2	Area in %	Area in km2	Area in %
Bare surface	16612	9.0	17328	8.9	35731	18.7	45521	26.8
Built-up area	2466	1.3	9515	4.9	13008	6.8	13901	8.2
Deciduous woodland	83097	44.9	96766	49.6	82397	43.2	67021	39.5
Mosaic forest	83062	44.8	71611	36.7	59688	31.3	43226	25.5

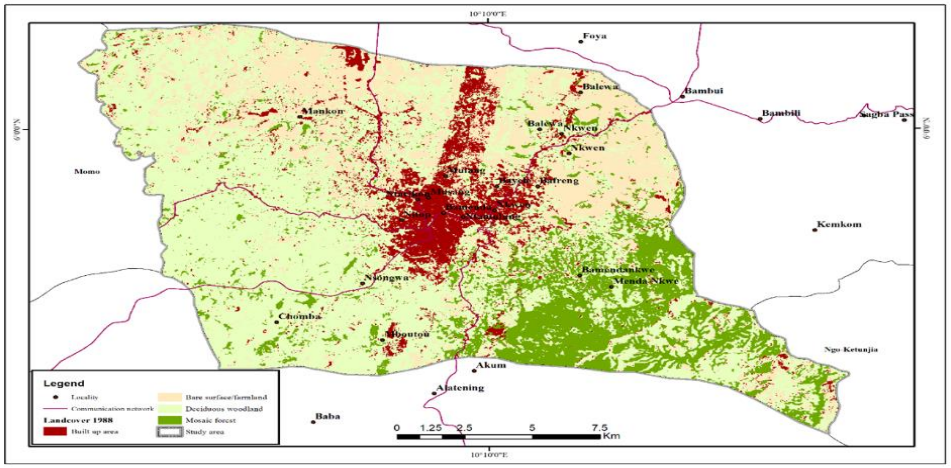
Source: Derived from LULC maps of 1973, 1988, 2003, 2023

Table 16 indicates that bare surface area experience a tremendous positive and steady increase in land use and land cover from 16612 in 1973 to 17328 in 1988 and further increases to 35731 in 2003 to 45521 in 2023. Built-up increase from 2466 in 1973 to 9515 in 1988 and later witnessed an increase to 13008 in 2003 and 13901 in 2023. More so, deciduous woodland increased from 83097 in 1973 and further increase 96766 in 1988. Land use/land cover later witnessed a dropped from deciduous forest from 82397 in 2003 to 67021 in 2023. Also, mosaic

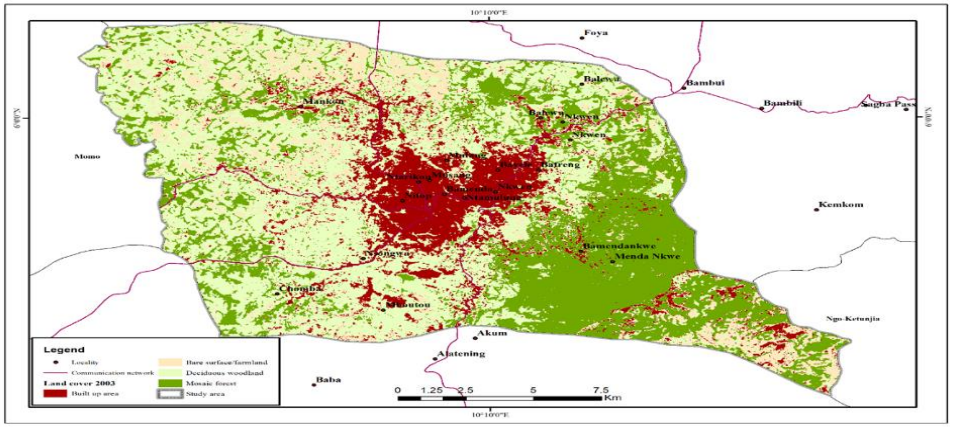
forest witnessed a constant decreased through four periods at 83062 in 1973 to 71611 in 1988 and later decreased to 59688 in 2003 and 43226 in 2023.



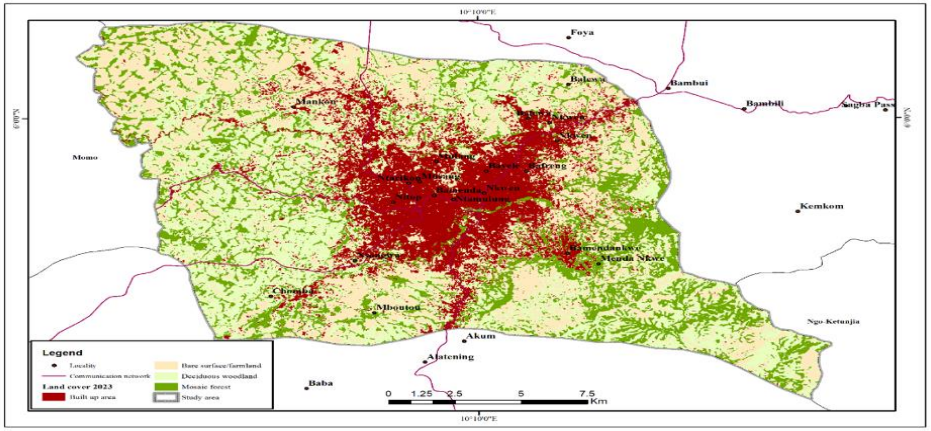
1973



1988



2003



2023

Source: landsat (1973, 1988, 2003 and 2023) Google map NIC, Google Earth images and field work (2023).

Figure 16: land use and cover situation in the Bamenda municipality for 1973, 1988, 2003 and 2023

2.4.2. Urban challenges in some sample quarters in Bamenda

To identify urbanization challenges in the study area, a number of respondent responded positively, Bamenda municipality has since in the past years been identified as an urban area facing a lot of urbanization challenges. A great majority of those respondents living in the Bamenda municipality identify truly that there are urban challenges in the study area with 84% of respondents who agreed that because of increase in birth rate and inflow of many people in the area, many things has change even prices of agricultural goods and many recreational facilities has promoted rural exodus in the study area while 5% disagree that there is no urban challenges. According to field survey, urban challenge is the order of the day in the Bamenda municipality to the extent that most of the respondent that is 11% did not decide anything as concern urbanization challenges in the study area. Below are some environmental challenges.

-Flooding

-Poor waste management

-Landslides

-Pollution

-Loss of Biodiversity

2.4.3. Foresee urban challenges in the study area

From the responses gotten from the questionnaires administered, it shows that within the coming years, urban challenge in the Bamenda municipality will occupy all the quarters in the study area. This is because the researcher in the field of study after close observation, noticed that, urban challenge is gradually taking the whole town as the town is expanding fast toward the peripheries. In the field, 75% of the respondents accepted that in the coming years, urban challenge is likely to take up the whole of the study area while only a few of them that is, 10% were on the opinion that they do not see anything of such in the coming years. So prospect of urban challenges as a result of uncontrolled growth is high while 15% of the respondents did not decide anything as concerned urbanization challenges in the study area.

2.4.4. Feelings toward urbanization challenges

From the responses gotten from questionnaires administered, feeling toward urban challenges in the study area was high, a greater number of respondents with 73% were not happy with this

issue of rapid urbanization in the study area because of its present consequences and foresee future consequences, but some of them are happy with the growth and some of them explain that urbanization is a good phenomenon but that its only need to be controlled by the councils and the legal authorities involved in the study area. Some of them that is 19% feel unsatisfied with the problem while some of the respondents with 8% being indifferent with rapid urbanization in the Bamenda municipality. So with this idea in mind by some of the respondents, it becomes difficult to fight against rapid urbanization in the study area and the negative consequences that comes with it.

2.4.5. Urbanization and development

Rapid urbanization in the Bamenda municipality has also been described by some respondents as an agent of development and to some, it is a bad phenomenon to the Bamenda municipality. According to field observation, urbanization in the Bamenda municipality is for development because urbanization have brought so many development in the study area both economically, socially and politically, with a greater number of diverse culture from most tribes of Cameroon. In the field, 77% of respondents in the field agreed that rapid urbanization in the Bamenda municipality has brought about development due to the multiple activities present in the area, 15% of the respondents did not abide to this idea while 6% of them remained undecided that is neither agreed nor disagreed. So with critical look in the field by the researcher and according to respondent responses, truly urbanization in the Bamenda municipality is for development though with some challenges faced by urban dwellers.

2.5. Physical environment and urbanization challenges in the Bamenda Town

The physical element such as climate, relief, drainage, vegetation, geology and soil have played a primordial role in the rapid growth leading to infrastructural development and housing challenges in the Bamenda municipality.

2.5.1. The influence of climate

Bammenda municipality has a fresh climate with moderate temperature, which favors human settlement. This climate is influenced by two air masses: the northern east trades (Harmattan haze) and south west monsoon winds, which cause the marked dry and rainy season respectively. Absolute annual average precipitation ranges from 1700mm to 2824mm.The rainy season is usually longer and last just for four months from mid-November to March (North West Regional service for Meteorology, 2016). This plays a vital role in human occupation of the steep slopes and low-lying swamps. In the event of excessive rainfall,

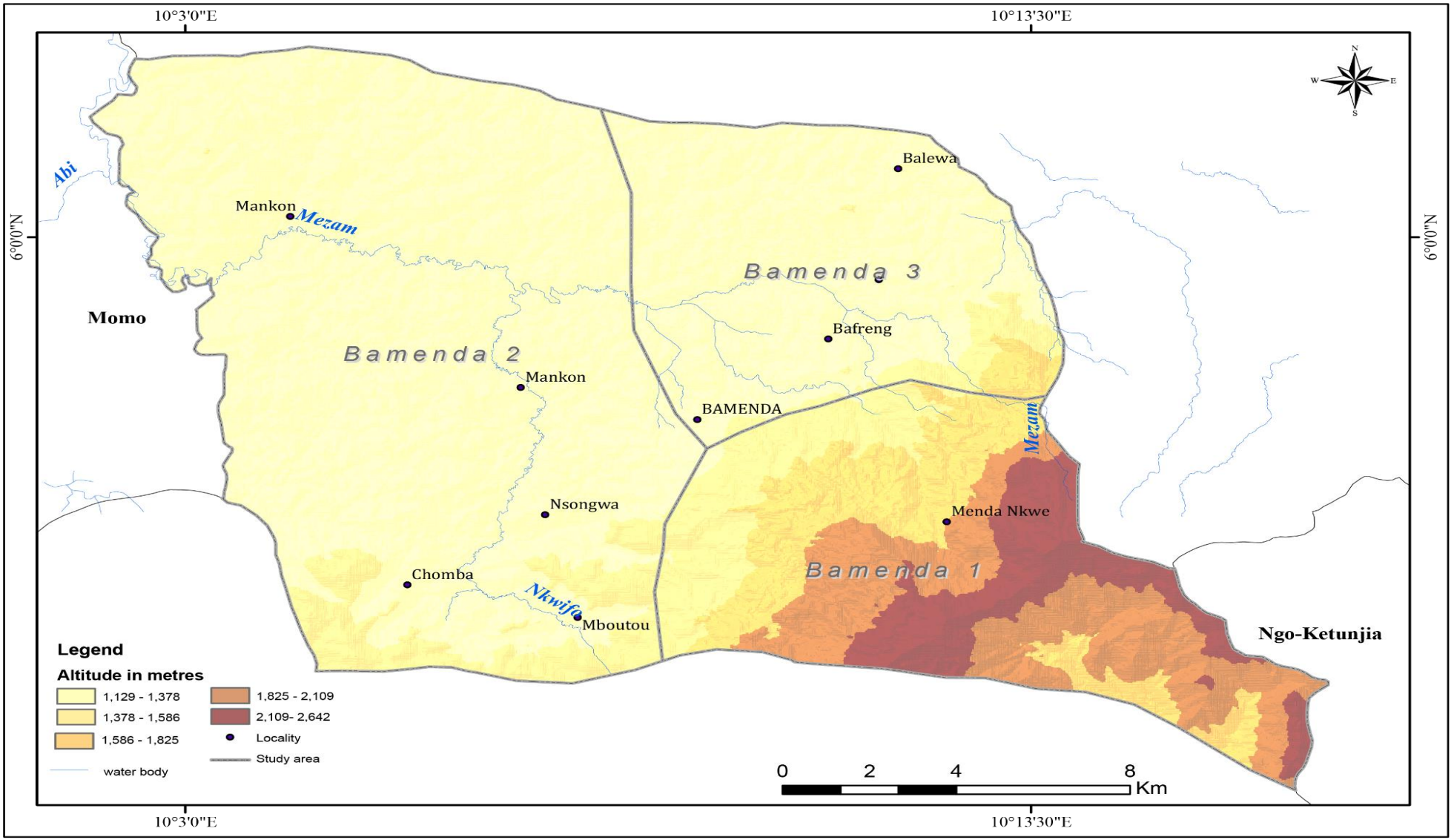
environmental problems such as landslide and floods are common especially in the month of July, August and September. This is the case in Bamenda, where the urban poor construct houses on steep slopes ant wetland, whereby, during excessive rains, flooding and landslides become the order of the day like case of September 2009 when flooding occurred mulang, Below Foncha, Ntamulung, old Town, Sisia, new layout resulting in two death, destruction of property and farmlands (kometa et al, 2012)

The average temperature ranges between 24℃ at lower altitude and 16℃ at lower and higher altitudes. Relief greatly affects the temperature of Bamenda municipality. Sunshine is relatively high with an annual total of 1900 hours with 50% in the dry season, 37% in the growing season and 13% during the harvesting (Achuo-chi, 1999). The high solar insulation in this tropical climate zone produces high energy fluxes. An interesting meteorological feature of Bamenda urban area is the protracted dryness. This creates drought-like conditions as the rain clouds that used to cover the hills slopes systems disappear and the local water resources get dried up. Humidity remains high at about 75-80%. The combination of high solar energy inputs, moderate high temperature and high relative humidity accelerates the weathering process. This issue of moderate temperature in Bamenda municipality has attract many new comers in the area there by leading to urban challenges because everybody like to live in areas where the temperatures are moderate.

2.5.2. The role relief

The relief of Bamenda municipality is undulating consisting of hills, valleys and lowlands. Generally, the relief of Bamenda shows a scenery where lowlands are intercepted by highlands. Bamenda municipality lies at an altitude of 1,614m above sea level (Achuo-chi, 1998). The town lies along the Cameroon volcanic line and exhibits two very distinct relief environment, namely the High Lava plateau (Up station) with an altitude of about 1,400m and the lower plateau known as Down Town made up of Nkwen and Mankon villages with an average altitude of 1,100m above sea level. These relief features act as deterrent to urban growth though broken in some places, the slope escarpment traverses the urban space dividing it in to the up-station and downtown areas. The high elevation section of the town is prone to landslides and rock fall especially after protracted periods of torrential rainstorms. Near vertical slopes occur in the immediate vicinity of the fault line. Though man has defied the physical constraints and inhabited parts of the escarpment, the difficulties and threat of slopes failure to houses and human life remain evident. Most of the built-up areas on this escarpment seem to be in transit whenever the heavy rains and surface runoff show their ugly appearance

(Lanbi, 2004). This varied relief offers diverse opportunities of the different categories of urban dwellers who find their housing sites in relation to their means. The nature of the relief has greatly pull administrative services and most business activities in Bamenda municipality especially in Bamenda I thereby leading to urban growth in the area where by a lot of people move to the peripheries of the town to build their houses thereby leading to urban sprawl in some areas. Therefore, the form and shape of the town has changed as shown in figure 16.



Source: NIC Yaounde, Google earth image and field work (2023)

Figure 17: The Relief map of Bamenda municipality

2.5.3. The influence of drainage

The relief of Bamenda municipality has greatly influenced the drainage of the region. Very few rivers and streams drain the area. The most important is the river Mezam (and its tributaries) which flows from the Bamenda I espcarpment through the city center and passes through the villages of mankon. The Ayaba and Liberkam Streams feed the river Mezam. These streams have a dendritic pattern. The River and its tributaries are responsible for the climatic hazards especially floods which affect mostly the urban poor construct houses on flood plains.

The streams take their rise from the high plateau and reach the foothills through waterfall over the bare hills such as that found in Sisia. Since the streams are youthful, their flow is rapid. Thus, debris runoff from the slopes becomes part of the input of the stream channels. During the rainy season, the dendritic streaming system combines with various erosional processes subjecting houses and properties, particularly along stream course, to periodic flooding during torrential rainstorms resulting in further destruction.

2.5.4. The soil and the vegetation

- **Soils**

According to Ndenecho et al 2004, the Bamenda escarpment is made up of volcanic rocks called trachyte with lateritic soils which are reddish as the dominant soil type. The soils are heavily leached and eroded, thus, cannot support dense vegetation and agricultural activities. The nature of this soil encourage torrent processes and is one of the factors responsible for the presence of gullies on bare surfaces evidence are seen in the Bamenda I especially reason why agriculture in the area is mostly practice at the out skirt of the town toward the suburbs of the study area. The valley are covered with alluvium washed from the escarpment, which holds much water. Alluvial soils are found along river courses, which attract especially the urban poor to occupy this area. Due to the increasing rate of urbanization and ecological marginalization, they are forced to colonize and cultivate these marginal flood plains. These are sites where urban agriculture are common with the presence of small farms and gardens found around most houses and the valleys harbor debris which are rich in minerals matter. The fine-grained brown soils are used to form mud blocks, which are used to construct houses in the Bamenda municipality

- **Vegetation**

The vegetation pattern of the Bamenda municipality is the direct consequence of climate and increased anthropogenic disturbances brought about by urbanization. The vegetation type is mainly savanna with patches of garlery and exortic forests. This is due to the intense dry season and sunshine which gives little room for the development of the forest vegetation. This is further compounded by the poor lateritic soils with limited nutrients to support maximum forest growth. Grooves and raffia palms dominate riverine slopes and in the most places, afforestation with eucalyptus trees has greatly modified the savannah like the case in Bamendakwe (Ako, 2016). Remnants of the forest (forest Refugia) indicate that Bamenda was formally an extension of the Tropical Rainforest and due the anthropogenic influences; the whole landscape of Bamenda I has been transformed in to a cultured vegetation (eucalyptus) and grassland. Perhaps, this mountainous backbone was either completely forested or covered with moist montane forests. Very little of this climate vegetation remains today. The original forest has been replaced with different kinds of savannah distinguished from the original forest and woodland by a continuous grass layer. The growth of this forest has been hampered by anthropogenic activities brought about by rapid urbanization in the Bamenda municipality. The rapid urban growth in the Bamenda municipality is seen through the clearing down of large portion of the forest to make way for human settlement.

2.5.5. Forest and Fauna

The only natural forest is the Bafut-Ngemba forest. This is a potential for the promotion of tourism. The natural forest occupies 1778 hacter while registered private forest occupies 24 hectare. Total surface area occupied by the forest is 1802 hectare representing about 16% of the total area in Bamenda. The natural forest is under threat as illegal exploitation of the forest is being practiced with impunity. The forest is exploited for habitats reasons (wood for construction) and for energy use that is fire wood and its derivative, charcoal and wood shavings (used for local brazing and poultry production). No inventory of the animals in the forest has been made. Stories have been told of the presence of gorillas, antelopes and chimpanzees at the reserved forest but the pressure put on the forest by humans have caused the extinction of these animals. However today, artisanal hunting is being practiced. Animals like Cane rats and birds like Bush fowls' are being hunted. Most animals are domesticated for household economic purposes. These include pigs, rabbits, sheep, cattle and goats. Birds kept for same purpose include table birds, ducks and traditional fowls (table 17)

Table 17: major Forest Species within the Bamenda municipality

N0	Common name	Scientific names	Habitat	Uses	Part used
1	Eucalyptus	Eucalyptus Saligna	Exotic species	Furniture, building, medication, fuel wood	Wood leaves
2	Cypress	Cypress spp		Fence, windbreak	
3	Prunus	Prunusafriccana		Medication	Bark
4	Callistemon	Callistemon viminalis		Ornamental	
5	Pine	Pinuselliotti Pinusspp	Exotic species	Furniture, building	Wood
6	Royal palm			Ornemental	
7	Black fruit	Canariumschweinfrurhii	Exotic species	Food, furniture, building	Fruit, wood
8	Voacanga	Voacangaafricana		Food, medication	Fruit
9	Filao	Casuarinaequisetifolia	Exotic species	Environmental friendly tree, fuel wood, building	
10	Gnelina	Gmelinaarborera	Exotic species	Firewood, poles	Wood

Source: Regional delegation of forestry, NWR

Table 17, present major forest species within the Bamenda municipality stating their common names, scientific names, habitat uses and part used for all type of 10 tree species. It' difficult to have wild animals within the Bamenda as many of them have been domesticated. Nevertheless, some scared forest (Mendankwen) can have some wild animals but any inventory has not been done to know which types of animals are there and their number.

2.6. Reasons Informal Settlement in the Bamenda

Despite the risk nature of some quarters of Bamenda municipality like floods, landslide, and rock fall, these reasons testify the difficulties faced by some dwellers of the study area as some people still prefer living in risky quarters. These quarters continue to grow in number over the years despite the restriction of some them by the government and local authorities. The following are some of the reasons gathered from the field to why those in risky areas prefer to remain despite the risks.

2.6.1. Personal Residence

The principal reasons advanced by inhabitants of these quarters why they cannot quite their place of residence despite the challenges faced in this area. Some of the reasons gotten were; they are living in their personal houses among other reasons. Abandoning their house to go elsewhere is seen difficult and expensive for these settlers. They prefer to continue living in

these areas despite the challenges they faced than going elsewhere to start a new life which may be difficult for them.

The low cost of land and houses compared to other residential areas of the town close to the city center accounts for the growth of urban problems in the Bamenda municipality. Some migrants who are poor and cannot pay for high cost houses always end up in risky environments and ghettos where houses and land is cheaper as the best site for settlement. This account for the growth of urban problems in the Bamenda municipality.

Nearness to job site has become one of the most important reason for residing in the risky neighborhood of the study area. Most people living in the Bamenda municipality live toward the up-station where all the administrative services are being located. More so most of the farmers living in Abangoh are also there because of the presence of fertile soil in the area. The next reason for the habitation especially in sprawling neighborhood in the Bamenda municipality is land inheritance, land ownership in these quarters of the town especially risky quarter is mostly based on customary norms. This land is transferred from one generation to another within the family circle and the person inheritance, they find it unlawful to abandon their ancestral sites for other areas. They also believe that, their ancestors will always be there to protect them from any danger or risky than elsewhere. This accounts for the growth of urban problems in the Bamenda municipality.

2.6.2. Family Ties.

During the field study, it was observed that family ties played a role in influencing the growth in Bamenda municipality. It was discovered that when a person from a particular village comes and settle in a particular area, he/she later invites his relatives or friends to join him/her in that area. This is the case with the inhabitants of Bamenda-kwe, sisia who were mostly people from the west region of Cameroon. They testified that, through interviews and administration of questionnaires that they are in some quarters in the Bamenda municipality because of family ties.

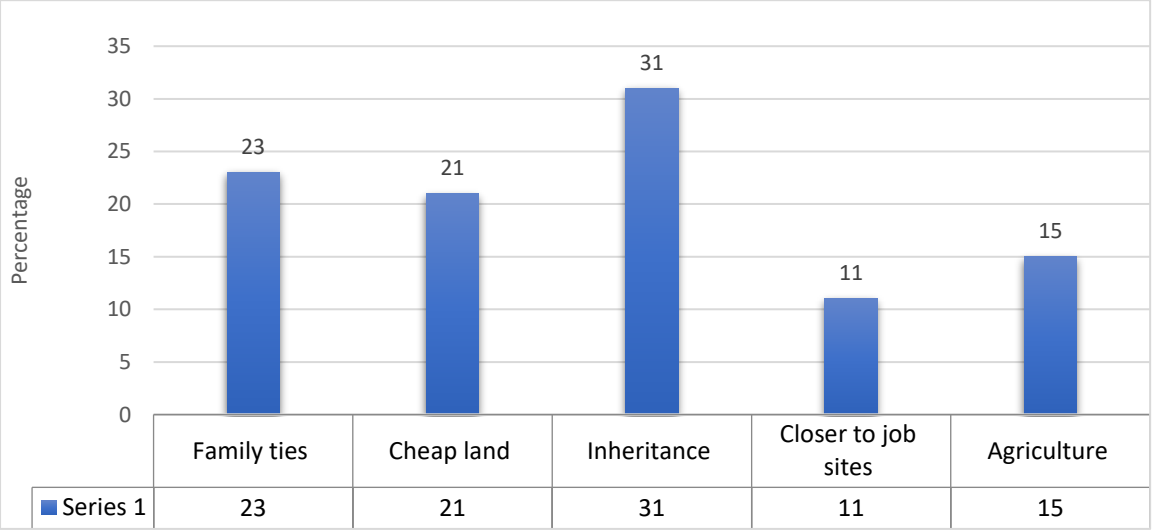
2.6.3. Social ills of the city center

The social ills plaguing the city center forced some urban dwellers to prefer the outskirts or risky zones and the ghetto areas of the town that are bit free from social ills. Through focus group and some interviews conducted in the field, some respondents hold that, social ill of the city center forced them to indulge in the risky areas. Some of the social ills in the city center included; high crime wave, limited space, pollution and overcrowding. This also accounts for

the growth of some risky quarters of the Bamenda municipality like Bamendakwe, mulang and Mbefi

2.6.4. Reasons for Residing in Risky quarters

Figure 18, analyzes reasons for residing in risky quarters with many motives by different inhabitants of Bamenda municipality.



Source: Fieldwork, 2023

Figure 18: Reasons for residing in risky quarters

Figure 17, shows respondents responses for residing in the risky quarters of the study area. A few percentage of them that is 23% of the respondents answered positively that one of the most reason why there are living in the risky quarters of Abangoh and Sisia is because it is their personal residence that have been constructed there. 21% of them confirmed that they settle in the area because of cheap land as they could afford expensive land in the city center. More so, 31% respondents accepted that inherited land and homes is their major reason to why they are living in the area while 11% affirmed that it was because nearness to their job site as they prefer to stay closer to their job site to avoid spending much on transport and lastly, 15% of the respondent responded that Agriculture was their main source of income so they prefer to stay in this risky areas. The researcher interview of the old mothers Sisia 2 to why know why she continue living this zone for a long time despite warning from the authorities and the risks in the area. The photo below shows the researcher and one of the resident of sisia

Photo 2: Administring questionnaires to one of the resident in Sisia

Source: Kenneth, 2023

“I have been living in Sisia for more than 30 years now and evene after my husband died, I couldn’t leave the area since I had no other place to go and till now, I don’t see myself leaving this area since I don’t have any other palce to go”.

2.3. Manifestations of Environmental Challenges in Bamenda Muncipality

There has been a great evolution in the functions offered by the Bamenda municipality with several period involved as presented in the phase above. The increase in population of the Bamenda municipality was the main driving force toward human settlement. Human settlement dynamism was manifested through the densification and expansion of shelter from the mother settlement in the urban area towards the rural settlement through expansion (MBANGA, 2018). The complete process was accompanied by full dynamism in the functions offered by the Bamenda municipality as shown in the time period above. This human settlement came with a lot of environmental problems which were identified from respondents during field work.

2.4. Environmental Challenges

Bamenda can be described as a brown city as it is home to several environmental hazards such as flooding, landslides, storms, climate change, and poor waste management amongst others. Field evidence revealed that 86% of the respondent have experience a flood

occurrence within the past two years. Flood occurrence is a consequence of uncontrolled settlement, the increase rate at which surfaces are being paved, new houses constructed and stream channels distorted and reduce in width span, flooding now features top of the list of natural hazard within the Bamenda municipality (Nyambod, 2010). In the field, 75% of the responded indicated that they have experience the occurrence of landslide mostly occurred in the heart of the rainy season that is within the month of July and September with rainfall varying between 340mm to 450mm. landslide in Bamenda is thus provoked by rapid urban development resulting from progressive occupancy of steeper slops adapted by cutting terrace-like areas and redistributing materials to provide building site. Heavy rains tend soak and dislodge large rocks masses sometimes resulting in the complete crushing or burial of entire housing unite. Respondents identified landslide and land subsidence to be more common in Abangoh and Sisia quarters while flooding was seen to more common in mulang and Ngohmgham quarters.

2.5. Identification of Environmental challenges

To identify environmental problems, a number of respondent responded positively, Bamenda municipality has since been witnessing environmental challenges as a result of rapid urbanization in the area with 84% of respondents who agree that because of the increase in birth rate and inflow of many people in the area, many things has change within the natural environment like loss of biodiversity, land degradation, constant floods and high increase in land pollution. Many things has change even prices of agricultural goods and recreational facilities has promoted rural exodus in the study area while only 5% disagreed that there is no environmental challenge. According to field survey, environmental disorder is the order of the day in the Bamenda municipality to the extent that 11% did not decide anything as concern environmental challenges in the study area.

2.6. Identified Environmental problems

a) Increase in pollution

The increase in traffic also lead to an increase in pollution, especially burning of this household waste in strategic quarters of Bamenda-nkwe. Since most of the indigenes do not empty dirt's in their bin. However, this only contribute a little as compare to dump abandoned in public places over the town. The problem of waste mismanagement in the Bamenda municipality is alarming as the whole is saturated with dirt. This increase in waste is as result of increase in urban population and household consumption which causes additional types of pollution. Thus,

urbanization and level of pollution are closely linked to each other as seen in photo A and plate J&K

Photo A and plate 5 shows saturated waste leading to pollution in Bamenda municipality

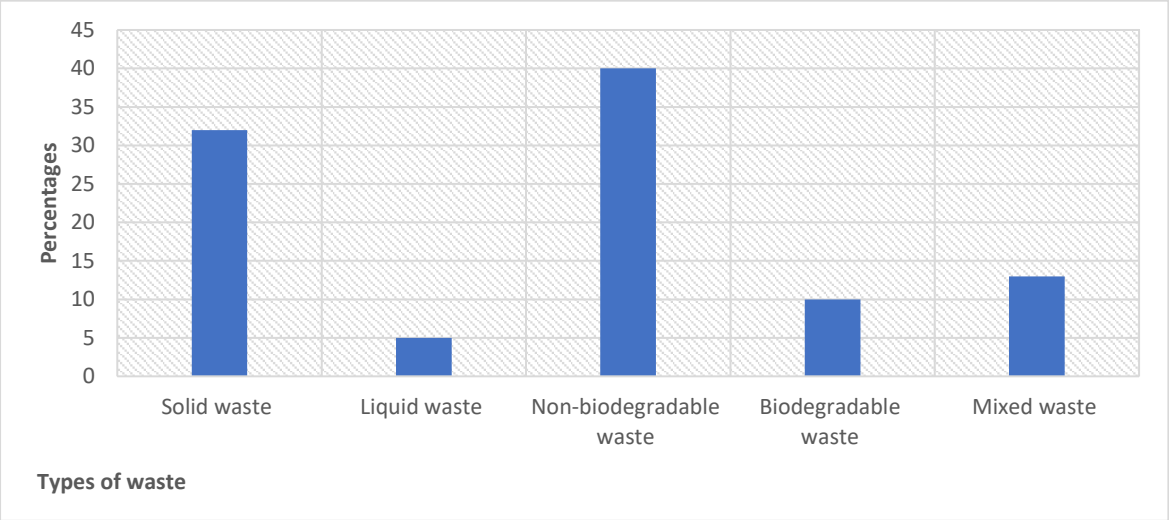
Source: photo by M.M Lukong, 2023

Photo 3: Abandone waste in Sisia market

Plate 5: Abandone waste in Mile 4 market and Sisia quarter

Source: Photos by M.M. Lukong, 2023

Photo 3, and plate 5 present abandoned waste in the Sisia market while plate L present the burned waste in the upper Sisia quarter and plate M also present abandoned waste around the mile 4 park. The situation in the Sisia market is serious called for concern as waste has taken the whole market. Those whose shops are closer to the dirt constantly wear facemasks to avoid direct contact with the odor from the dirt which often threatened their life's health wise. Different types of waste was identified during field observation as seen in figure 18.



Source: Field work, 2023

Figure 19: different types of waste found in the Bamenda municipality

More than 40% of waste found in the study is non-biodegradable waste. This explained why the whole town is saturated with waste since this type of waste cannot be transformed so people are forced to burn it in other to free the town and which in return brings more harm than good as the town is seriously polluted. As shown in figure 19, only 5% of liquid waste is produced in the Bamenda municipality reason being that Bamenda town is not an industrial area. Thus, Bamenda town is highly characterized by pollution as a result of different types of waste in the urban area. Solid and liquid waste are poorly disposed of and sometimes along the roads and around water. This is the case along the mile 4 park road where solid waste is disposed along the road in the bridge behind the park. Environmental health is a major concern to institutional and municipal authorities as waste have to be properly managed in a bid to prevent the spread of diseases. Dumping waste on the street is an environmental mistake, such neighborhoods suffer from flood. The data obtained from the field on pollution, floods and other aspects of environmental problem is presented on table 18.

Table 18: Data on pollution, floods, loss of biodiversity in the selected quarters of the Bamenda municipality.

Quarters	Municipalities	Effective resp.	Environmental problems			
			Floods	Pollution	Portable H2O	Others
Abangoh Ntangang	Bamenda I	8	2	4	2	0
Bamenda-nkwe		20	4	10	5	1
Mulang	Bamenda II	17	3	7	7	0
Lower ngomgham		50	4	32	11	3
Ntamulung		25	3	13	7	2
Sisia 1	Bamenda II	7	0	3	3	1
Sisia 2		18	3	11	5	0
Mbefi		5	0	5	0	0
Mbesoh		2	1	1	0	0
Total		152	18	86	37	7
%			12	56.5	24.34	4.6

Source: Field work, 2023

Below is a detailed explanation of respondents taken from the table 18 which is pollution, floods, and loss of biodiversity.

b) Loss of agricultural land

Loss of agricultural space is one of the main effects of urbanization in the Bamenda municipality. Respondents in some selected quarters during field investigation 4.6%, accepted that Bamenda has witness a loss in its biodiversity and agricultural farm land in particular. Places that urban agriculture was practice is gradually being cover up by human settlement responded by one of the respondents. This alone has affected the prices of farm produce negatively as prices of this commodities has increase, he continued to say. A greater proportion of respondents in the urban area confirmed that prices of food stuffs have basically increase as compared to the previous years. Others said that, sometimes the food stuffs are not even available in the market which clearly mean that food stuffs are not only expensive but also scarce (Plate 6).

Plate 6: Loss of Agricultural land in Abangoh

Source: Photos by M.M Lukong, 2023

Plate 6 shows loss of agricultural space in some urban sprawl areas of Abangoh Ntangang and Abangoh being replaced by buildings. Plate O present ongoing construction of a church while plate N present residential houses. This expansion of human settlement is as result over population in the Bamenda municipality. It was also observed that only people with low income rate settled in this areas because they could not afford land in the urban centers. However, field results shows that, this expansion do not only lead to loss in agricultural land but also it cause land degradation as the few lands are over cultivated and overgrazed which exposes the soil to erosion and the end results being land degradation. One of the respondent in Abangoh Ntangang also indicated that stones are being extracted from the hills of Abangoh Ntangang for construction purposes. All these listen above have caused serious environmental damages confirming the fact that rapid urbanization process in the Bamenda municipality has environmental challenges. Photo 4 below shows the researcher and one of the resident of Abangoh after a focus group discussion.

Photo 4: Reserchер and one of the resident of Abangoh

Source: Kenneth, 2023

c) Floods

Floods in Bamenda town generally come as a results of poor waste management where most of the waste like bottles or plastics are washed to the water bodies where they block water passages and water cannot flow smoothly and so, this water runs out of tract and the end results being floods. Also, floods in Bamenda are as result of poor construction of runoff. Most runoff in the Bamenda are narrow which makes it difficult for water to flow. The plate below shows flood in mile 4 bridge and the poorly constructed water channels.

Plate 7: Flood in Mile 4 Bridge and Poorly Constructed water channel

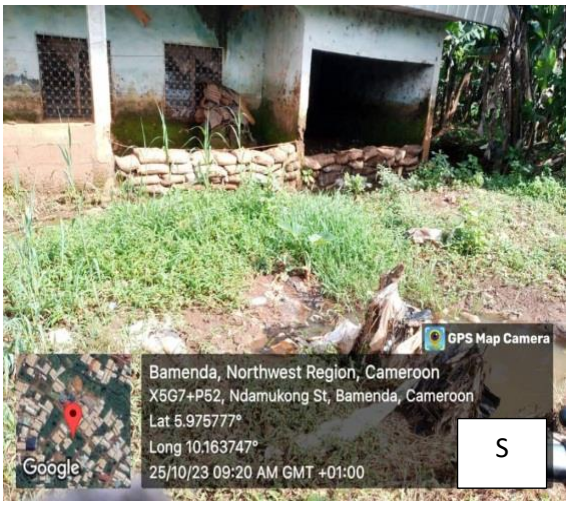
Source: Bakah, 2022 **Source: field work 2023**

The plate above shows how water rain covered the mile bridge making it difficult for people to cross and the poorly constructed runoff in the Bamenda neighborhood.

Increased episodes of flash floods, climate variability is also reflected in the instability of seasons. While it was hitherto possible predict periods of heavy rainfalls, today it is more complex to master the behavior of different climate parameters. Statistical examination revealed that annual rainfall in the city of Bamenda experienced a break in 1958. This break buckled the wettest decade of the series. After three decades of worsening, rainfall is experiencing rising since early 1990. The average profile of the annual distribution of rainfall shows a concentration of over 53% in 03 months (July, August and September). During these three months, rivers of the city know their flood flows and population in the valleys are affected. The analysis of annual number of rainy days shows a downward trend and an increase of extreme rainfall event frequency (>50mm in 24h). it is also apparent that more and more years are experiencing erratic distribution of their precipitation. Then, the perception of is significantly reduced, as only 12% of the population affirmed that there is floods in the Bamenda as shown in table 18. However, subsistence activities are also affecting and development is facing new subtleties. Conclusively, the rainfall experienced strong variability in the town of Bamenda. This situation reinforces the risk of flooding by increasing flood water and increasing the vulnerability of population. The plate A and B below shows flooding in some Abangoh and abandoned houses in some flooding areas of the Bamenda.

Plate 8: Flooded Houses and Abandone houses in Abangoh

Source: Barka, 2022



Source: photo by Lukong, 2023

Plate R shows flooding areas of Abangoh central and plate S shows abandoned house in the same areas. Although these hazards originate from natural systems and mechanisms, anthropogenic modification spearheaded by urbanization have reinforced the frequency and magnitude of certain hazards like flood. Field observation revealed that flood prone settlements frequently experiences landslide especially those located down slopes. This requires huge financial investments to ensure slop stabilization given the hilly and undulating nature of the relief.

d) landslide

Landslide is fast becoming one of the major environmental problems in Bamenda which comes about as a result of rapid urbanization. Landslide is seen occur in the heart of the rainy season that is from the months of July to September with rainfall varying between 340 mm to 450 mm. landslide in Bamenda is thus provoked by rapid urban development resulting from progressive building sites. Heavy rains have the tendency to soak and dislodge large rock masses sometimes resulting in the complete crushing of house leading to massive dead. Mean values were used to represent the results obtained from questionnaires that were administered to the 15 randomly selected in each of quarters sampled.75% respondents identified landslide and land subsidence to be more common in Abangoh and the Sisia quarters.

2.7. The mystery behind Natural Hazards

The natural environment of Bamenda has been over-stressed as a results of high population pressure on land. Environmental hazards provoked by rapid urbanization do not show signs of warning before their outburst. They are all too sudden and their impact on the

inhabitants living within and without its area of occurrence cannot be underestimated. The first few days of the month of August that is 4th to 10th August 2009 were characterized by sporadic outburst of natural environmental hazards within the city of Bamenda (Nyambod, 2010). Environmental experts will be quick to say that Bamenda had exceeded its carrying capacity. Geologists and Geographers will definitely have their own side of the story. There has been the percolation and progressive upwelling of soil top layer due to water accumulation from heavy rain.

2.8. Conclusion

Hypothesis 2 state that "the uncontrolled urban development process in Bamenda is affecting the environment negatively". While the negative factors like loss of agricultural space, pollution, floods and landslide also count in explaining urbanization challenges in the Bamenda municipality. In order to verify this hypothesis, data on respondents view was used. A greater percentage of the respondents in the field answered yes with 75% of the respondents standing on the view and 20% of the respondents in the field rejecting the view while only 5% of the respondents stood on the view for no idea. But from all the responses, uncontrolled urban development and rapid urbanization in the Bamenda are largely responsible for environmental problems in the study area.

More so, reduced agricultural, pollution and landslide has also played a very big role as urbanization challenges in the Bamenda municipality is concerned. Agriculture in the study area that was usually done in large scale to feed the population of the study area, has been reduce for past two decade now as urbanization process keep increasing . Most of the respondents said that land that was always used for the cultivation of various types of crops has been reduce due to increase population which has necessitated the demand for housing in the study area.

CHAPTER 3

DEFICIENCIES OF ALIEN URBAN NORMS IN BAMENDA TOWN AND IMPACTS ON URBANIZATION CHALLENGES.

3.0. Introduction

Sustainable urban planning is very vital in achieving long lasting urban development. Urban planning is the process of anticipating, representing and regulating development in an urban area so as to ensure an effective and harmonious organization of the urban space through a master plan for a town aims at organizing urban space so as to create a comfortable environment for human settlement. The plan equally aims at demarcating land between private and public uses and carving out the location and extent of new development sites in the town. The sound implementation of urban planning regulations is thus, an effective tool to curb urbanization challenges and ensure the sustainable evolution of urban centers. However, Cameroon and Bamenda in particular faced challenges in implementation development policies as they mostly adopt foreign norms in implementing urban laws and development processes. This chapter therefore examines and analyses deficiencies of alien norms in Bamenda municipality and population adaptation to urbanization challenges which comes a result of these deficiencies.

3.1. Nature of Africa's foreign policy

For a long time, foreign policy theory has been ruled by western perspective with little regard to Africa. In the past half-century, the cold war dominated the foreign policy analysis focusing on the strategic rivalries of the powerful nations. The focus inclined towards states viewed as well-formed, highly developed and mostly administratively rational. Less attention was paid to the foreign policies of developing countries particularly in Africa and Cameroon particular. African countries are often working on tight financial constraints, most struggle to fund even a few embassies and lack skilled personnel and financial power to engage in various issues of international affairs. Because of the diversity of African nations, there is no single African foreign policy but many, portraying the varied national interests, weaknesses, strength and national histories. In some fields, African foreign policies exhibit great resemblances; in others they differ across critical cracks. Just as Russians, Britain, France and Americans do or might have dissimilar view of causes of threats in international relations; countries in Africa also differ, among themselves and with former powers, in their perception of risks and of how and what foreign policy areas should be focused on. The states in African are unquestionably

aware of the pluralities that characterize their continent. Nevertheless, they have identifiable urban laws and foreign policy preferences and strategies. Africans perceive themselves as evolving a collective personality to protect their continents' international interest.

3.2. Urban law in Cameroon and Bamenda in particular

African cities tend to be shackled to inappropriate, ineffective and redundant laws and policies for managing them. These laws run deeply through each country's social, economic and political systems and are often based on assumption that there is a strong national government that is able to implement them. For example, many urban land laws especially Cameroon and Bamenda in particular assume that the state has the capacity to manage long-term land registration systems. This is often not the case, resulting in legal uncertainty and vulnerability.

Over the past two decades especially, African countries have been urged to reform their urban policies, practices and laws in order to turn cities into more effective engines of economic growth and shift from an extractive to a more developmental and inclusive system of urban governance letting go of colonial urban policies since it has proven to be a failure in the African society as it is the case in the study area. Despite making global commitments to better urban management, few countries including Cameroon have made significant changes to their urban governance and land management legislation. In some cases new laws have been written and finalized but not actually approved by relevant law-making bodies as it is the case in Bamenda municipality. Where new laws have been enacted, only a few have been fully implemented. This lack of productive change is partly due to the "export of regulatory rules and practices from major powers to weaker states" a practice that is common in international economic law but has spilled over into urban law because of urban law's importance in shaping property law. The view is often that if a country is to have an urban development and real estate sector that mirrors that of more developed countries, it needs to have those countries' laws, too. New urban laws may draw on international experience but should not be dominated by it. Cameroon lawmakers should rather focus on the context within which other countries' laws have worked: what were the political, administrative and legal factors in those countries that led to a particular type of law's success or failure? The answers to this question could reveal what might work in their context. Lawmakers should also consider the substance and principles of global commitments, and turn them into practical steps for improving urban law.

3.3. The Implementation of urban planning laws in Cameroon and the Bamenda master plan Applied in the Bamenda municipality

Urban planning in the Bamenda municipality like any other municipality in Cameroon is enshrine in good laws and regulations. The challenge always lies with the implementation of these urban planning laws. Urban planning after independence in Cameroon began in 1966 with the enactment of laws N0 66/10 of November 18th 1966 which laid down the urban planning code of the former east Cameroon and decrees guiding the implementation of these planning laws (law No. 66/10 of 18th November 1966). After the reunification of Cameroon in 1972, two major laws (1973 and 2004 urban planning laws) guiding urban planning in the country have been enacted which corresponds to the two master plans of Bamenda municipality.

3.3.1. The 1973 urban planning law and the first master plan of Bamenda town

To guide urban developments in Cameroon, the first law regulating urban planning in the United Republic of Cameroon was enacted in 1973 (Ordinance N0 73/20 of May 29th).

3.3.2. Provision of the 1973 urban planning law

The 1973 law laid down rules guiding development in urban areas and so called on all the town in Cameroon to develop a town planning document to guide developments in the their various jurisdiction. Following the law, several towns in Cameroon developed town planning documents including Bamenda town that developed it first master plan in 1985.

3.3.3. Implementation of the 1973 law in Bamenda through the 1985 master plan

Following the provision of the 1973 urban planning law in Cameroon, the first master plan of Bamenda town was conceived in 1981 and published in March 1985 (1985, Bamenda master plan). This plan was drawn based on two target periods; a short term target period that was to last up to 1989 and a long term target period that was to last up to 2004. The plan particular defined;

- Land use (residential, industrial and commercial land use)
- Localization of major facilities (education, health, administration and other facilities like sport and leisure facilities)
- Extension sites
- Major roads system

According to the plan, the built up area of Bamenda in 1981 was 10.78km2. This area constituted; 65% for housing, 10% for facilities and 25% for roads.

3.3.4. Evaluation of the 1985 master plan

Efforts were made to implement the 1973 urban planning law in Bamenda through the 1985 master plan. Unfortunately, the implementation of this law in Cameroon and Bamenda was characterized by a lot of misunderstanding during this period until the early 2000. Coupled with the galloping effects of the population growth and the economic crisis of the late 1980s and 1990s that aggravated urban poverty, the master plan was poorly implemented. This was because; the various economic policies implemented under the Structural Adjustment Plan (SAP) virtually under look the urban sub-sector. Instead of the government galvanizing efforts towards ensuring the effective implementation of the urban master plan, her attention was now titled towards fighting the economic crisis. This led to the poor implementation and final abandonment of the 1985 master plan and subsequent growth of haphazard and uncontrolled development (urban challenges) in the Bamenda municipality

3.3.5. The 2004 urban planning law and the second master plan of Bamenda

In 2004, the 1973 law was revised through the enactment of law N0 2004/003 of 21/2004 regulating town planning in Cameroon.

3.3.6. Awareness on the existence of the 2004 urban planning law

The development of the urban planning regulation aimed at guiding urban dwellers in the habitation of urban space so as to ensure a harmonious, organized and sustainable development of the urban centers. The awareness on the existence of urban planning regulation therefore, set a base for the respect of these regulation. Priso (2011) held that, they continue to be problems regarding implementation and compliance with town planning laws in Cameroon cities. In a bit to confirmed this findings, the opinion of the inhabitants on the awareness of the existence of urban planning regulation in Bamenda municipality (68.2%) were not aware while (31.8%) of the respondents were aware of this regulation. This is in line with the UN habitat (1999) which opined that, the greater proportion in urban areas are not aware of urban planning regulations. Some of the inhabitance complained that they have never seen a hard copy of this laws or have been sensitized on it existence. This is a direct contradiction to section 49 of the 2004 law on town planning and urban development in Cameroon which state that “the involvement of the population, organized groups and civil societies in the implementation of general of town planning and management and construction should be encourage through free

access to town planning documents as well as sensitization, training, research and education in the area of the town planning and management".

3.3.7. Provision of the 2004 urban planning law

This law called on all the urban towns in Cameroon to developed documents guarding development in their respective areas. The law equally gave provisions on the content and drafting of town planning documents and categorized town planning documents into, the urban master plan (UMP), the land use plan (LUP), the urban sector plan (USP) and the area plan (AP) are the main administrative documents that guide urban development in Cameroon. In 2008, the 2004 law on town planning and urban development was supplemented by 5 decrees aimed at improving the legal situation that have existed for several years in the areas of urban planning (law N0.2004/003 of 21st April 2004 decrees N0 2008/0736 of 23rd April 2008).

- Decree N0. 2008/0736 of April 2008 laying down condition for drawing up and revising town planning documents.
- Decree N0. 2008/0737 of 23rd April 2008 laying down safety, hygiene and sanitation rules applicable for construction works.
- Decree N0. 2008/0738 of April 2008 organizing land-use procedures and processes.
- Decree N0. 2008/0739 of 23rd April 2008 laying down land use and construction rules.
- Decree N0. 2008/0740 of 20th April 2008 specifying rules on penalties for violation of town planning rules.

The five decrees set the bases for demarcation of urban spaces into different land uses and eventually the development of new master plans for the towns of Cameroon. As a follow up to this, the town of Bamenda developed it second plan in 2012 that was finally adopted in 2014.

3.3.8. Implementation of the 2004 law in Bamenda through the 2012 master plan

The new and recent master plan of Bamenda was conceived in 2011, publish in 2012 and adopted in 2014. The plan critically examine the land use classification and the road network in the town. Land use classification is the systematic grouping of land into different uses based on common relationship. The essence of classification is to create order, eased communication to users of land and also help correct utilization of land by land users. It is basic tool in decision and policy making especially when land users are well understood. There exist different land

users in Bamenda which have been classified into zones and roads network by the 2012 master plan to guide development in the town and check urban problems. The world bank urban development support projects (PNDP) are on-gong in the city of Bamenda to ensure this interconnectivity of land users. The different land users defined in the plan include:

- Residential land use (high, medium, low and mix density residential areas) with a total of 77.9% of the total urban land use
- Commercial land use (0.5% of the total urban land)
- Public and social service area with a total urban of about 6.3%
- Others land uses like road network (13.8%)

Field implementation of this plan was sub-divided into short, medium and long term projects earmarked to cover the period 2011-2027. The short term projects were estimated to run for a period of 4 years (2011 to 2015), the medium term projects for a period of 4 years (2016-2020) and the long term project for a period of 6years (2021-2027). The earmarked projects in the master plan were to be implemented by the different ministries and other stakeholders in the municipality.

3.3.9. Awareness on the existence of urban planning tools in Bamenda municipality (Urban master plan and other planning documents)

Four urban planning tools exist in Cameroon (the urban master plan, the land use plan, the urban sector plan and the areas plan). The urban master plan (UMP) is the most important as it embodies all the other three planning tools (Ndi et al 2017). It guides the development and allotment of land use in and urban areas and as such, an essential document in the sustainable development of an urban area. Despite the importance of this document, it is disheartening to observe that, majority of the urban dwellers in Bamenda municipality are not aware of it existence. Field data revealed that, 68% respondents were not aware of the existence of the Bamenda master plan as against 31% that were aware. Out of the 31% who were aware of the existence of the master plan, a majority of them testified that, they have never been sensitized or seen a copy of this master plan. They only hear of it existence from council officials when they pass around their construction site to stop the construction. Since the abandonment of the old master plan till 2014, Bamenda existed without any planning document. Based on this observation, it is clear that the haphazard and disorganized developments carried out in Bamenda municipality today is largely as a result of the ignorance on the existence of the recent master plan and non-implementation of the old master plan as shown in (table 19).

Table 19: Awareness of urban planning tools in Bamenda municipality

Yes	No	No idea
53%	42%	4%

Source: Field survey (2023)

Table 19 present respondent response awareness to urban planning tools. Results from the table shows that a greater percentage of the respondents in the field answered yes with 53% of the respondents standing on this view and 42% of the respondents in the field rejecting this view that there are not aware of urban planning tools in Bamenda municipality while only 4%of the respondents stood on the view for no idea for reasons best known to them.

3.4. Evaluation of the 2012 Bamneda master plan

This section evaluates the relationship (match and mismatch) between developments and the Bamenda master plan. An integrated approach based on the different land uses will be used to compare the match and mismatch of development and the master plan. Reasons responsible for the match or mismatch will also be advanced.

3.4.1. Residential Areas

Residential areas in the town are mixed with other land uses. A total of 77.9% of the total urban space of the town is proposed for residential purposes (PDPBC, 2012). The master plan earmarked the different quarters of the town to be used for residential purposes which match with field realities. All the quarters of Bamenda like Bamenda-nkwe, Menda-kwe, Ntafebu are proposed for residential purposes because Bamenda especially Bamenda is multifunctional municipality sharing residential function with other functions like administrative, religious and educational functions. These quarters are all used for residential purposes as proposed in the plan and as such match with master plan.

The probable reason for the match of some residential areas with the master plan is because, residential function is highly compatible with other land use functions like administrative, religious, commercial and educational function. Equally some urban dwellers of the town actually consult the city authorities and follow up all necessary administrative procedures like obtaining a land title and building permit before carrying any developmental project on their land. During field study, it was discovered that some people had land titles and building permits to confirm this. However, building in most authorized residential areas of Bamenda do not

appear in an organized manner as there do not follow a precise order and layout and as such create urban slums in the Bamenda municipality.

3.4.2. Unplanned areas.

A total of 1.5% of urban land in Bamenda is proposed in the master plan for commercial activities. Commercial land uses in the town include building and offices used for business transactions and professional activities. Commercial activities in the master plan of the study area is restricted to the CBD, district center, markets, motor parks, shopping centers, Neighborhood center and corner shop spaces. As such, commercial land use greatly matches with the master plan of the municipality though with limited spaces reason to why shops are found along road side in the Bamenda municipality leading to urban disorder.

3.4.3. Road Network

The major communication land use in Bamenda is road network. The master plan has classified urban roads in the Bamenda municipality. That is; regional roads, primary distributor roads, secondary distributor roads and collector or access roads. Regional roads are major roads that provide access in to the urban area and linkage with other regions. They are classified as N6 roads and have been designed for dual carriage way purposes (PDPBC, 2012). Primary distributor roads are roads linking other towns and suburban areas into the city center and are linked to regional roads. Secondary distributor roads are roads linking primary distribution roads and neighborhood within the town. These roads are 6-7m wide side drains. Collector roads are those that link secondary distribution roads and homes or business places. They are design to convey traffic from the secondary distributor roads and distribute to home and business places. However, some roads axis in Bamenda municipality do not respect planning. They exist some narrow collector roads linking some residential houses in some neighborhood like Abangoh that are less than 7meters wide. This is direct contradiction of the master plan part 1, chapter 4 of the 2004 town planning law in Cameroon which state that “Urban renewal and expansion shall be approved for building purposes only where it is served by a public or private roads of at least 7 meters wide except specially prescribed by town planning documents or by the mayor of the council concern”.

3.5. Urban agriculture and planning problems

According to the master plan, land for urban agriculture should be large enough to accommodate the growth and development of crops. Livestock areas should also be large enough for the animal to be raised in a fenced and gated area. Farming in the town according

to the plan is restricted in areas prone to erosion, densely populated areas, flood plains that do not have adequate setbacks in the river channel or banks and farming activities that results to risky health and environmental degradation.

Unfortunately, some of the agricultural activities taking place in the Bamenda municipality like Bamendakwe and Ngomgham do respect planning. Agricultural site are not respected in the Bamenda municipality as unplanned agricultural activities is taking up space in Bamendakwe, Ngomgham and Abangoh central. Most of the crops cultivated here are mainly for home consumption with little of it being sole in Bamendakwe main and food market.

3.6. Contribution of Alien norms to underdevelopment of the Bamenda municipality

Cities in developing countries face acute problem of poverty, exclusion, insecurity and environmental degradation. The ever-widening gap between rich and poor is symbolized by the stark disparity of the living environment. This is reflected in the contrasting urban forms-exclusive gated communities are developing side by side with rundown neighborhood and slums as it is the case in the study area as the 1985 and 2014 master plan was drawn using colonial norms not taking into consideration the nature of the town.

Proper urban planning is the key to bridging the urban divide and is an essential tool to make cities inclusive, environmentally friendly, economically vibrant, culturally meaningful and safe for all. To be successful in helping to achieve urban development, planning need continuous updating. Great strides have already been made, but more is needed. This is evident in the study area as most works are still in paper with little implementation in the field. More so, they adopt their development strategies but from colonial masters which are not applicable in the present day society.

Urban planning does not achieve better cities automatically. Neither urban planning nor spatial design are ethically neutral activities. They translate-through resource allocations and budgeting exercise-political visions and values into the physical realities of cities. In many countries planning systems and decisions often protect the interest of the rich or are limited to beautification and decoration of urban spaces. This very true in the Bamenda municipality as some areas are decorated and planed than the others. A good example is found in the around the up-station where most administrative offices are concentrated (Bamenda I municipality)

In many developing countries, (Cameroon and Bamenda municipality) planning systems and processes are still largely base on colonial laws, design to support spatial segregation and population country. They fail to reflect the need and urban priorities of urban

residents. The urban model they have promoted has proved both unaffordable and inadequate for catering to the diversity of ways of life and need of developing world cities.

In the develop world, urban planning was originally conceived as a tool for the development of newly industrializing cities. Today, cities in many developed countries have to contain with processes of deindustrialization and shrinking population. Moreover, cities forms which were proposed as progressive and more efficient are under increased criticisms for the patterns of consumption they command, in the face of growing awareness of global climate change. Despite the fact that urbanization process adopted by the colonial master have failed to be applied in the western world, Cameroon and Bamenda town still continue depending on this fail urban development process that was once used by the colonial master and it failed them. This is a clear evident that urban development in Bamenda is going nowhere.

The failures of planning to come to terms with informality and poverty and to go beyond the modernist dream, has partly to be blame for the failure of cities as engine of economic growth and absorbers of surplus labors from rural area. This result in exacerbation of ecological crisis, hinders agricultural development and install a vicious cycle of poverty with more poverty-driven growth of the cities. This why urban sprawl is very common in the Bamenda municipality as people are seen living the town to the peripheries where living condition are affordable and favorable.

For urban planning to play a positive role in urban development, it need to vigorously access and reinvent itself-through a serious analyzing on the new context of urban planning and responses it can offer, by learning lessons from stories of innovation and success, and on this bases advocate vigorously for better and more appropriate planning for sustainable development.

Indeed today, like rarely before, there is global consensus on the need to reflect on modernist development patterns. Urban planning can be at the forefront of this and provide important responses.

3.7. Strategies used by the population or population adaptation to urbanization challenges

In order to meet the problem of urban challenges, local planning policies can be quite effective. This means that municipalities take efforts that people stay in cities and do not settle down in the peripheries or ghettos.

This can be accomplished by increasing the living quality in cities compared to the peripheries. This is an easy but yet quite effective way. If these limits are quite strict, they lead to a significant reduction in urban problems since people are simply not able to build their homes in restricted areas. Moreover, by setting strict building permit limits, it is likely that the prices for buildings in suburbs increase. This makes it even more favorable for people to stay in the cities instead of settling in risky zones or creating urban ghettos as shown in table 20

Table 20: Presents strategies of urban problems in the Bamenda municipality

Selected quarters in Bamenda municipality	Sensitization	Building permit	Land title
Abangoh Ntangang	17	1	1
Mulang	11	5	3
Ntamulung	10	6	1
Lower Ngamgham	12	4	5
Sisia I	7	1	3
Sisia II	6	3	1
Mbefi	2	10	5
Mbesoh	4	11	2
Bamenda-nkwe	18	12	10
Totals	87	53	31

Source: Field work July 2023

Table 20, present strategies of urban problems in Bamenda municipality in the various quarter which shows that sensitization is one of the best strategy with 87 respondents accepting that sensitization is one of the ways to prevent people from settling in risky zones in the field and building permit with 53 respondents, land title 31 of the respondents stood on the facts that building permit and land title are measures that be used to solve urban problems and avoid people from settling in areas that are prone to environmental risks in the study area.

3.7.1. Urban growth boundaries

Another related measure is urban growth boundaries. This means that a specific area is an area inside the boundary is used for urban development while the area outside the boundary is used for agriculture or other purposes, but not for settlement.

By using these boundaries, urban problems can be effectively mitigated since it is clear in advance where buildings are permitted and where they are prohibited.

3.7.2. Tax inversion

Local authorities are also using tax discrimination in order to fight urban problems. Municipalities charged fewer taxes on certain services which make people to avoid settling in some part of the town.

This include the tax on housing. The council lower taxes in the city center to encourage people to settled around the city center, this discourage from going far since housing around the urban area is cheap.

3.7.3. Land acquisition by local governments

Another measure against urban problems is land acquisition by local authorities. Through this acquisition, the local authorities decide on how the land acquired are be used which to an extent prevent people from settling in risky zones. Buildings are some prohibited from this lands acquired by the local authorities and are instead for reforestation or farming purposes.

3.7.4. Reduction in the number of private car ownership

A rather unpopular but quite effective way to reduce urban problems would be to reduce the number of private car ownership. Setting limits for the overall number of cars that can be registered would give people the incentive to stay in the city center since they have not the necessary mobility to commute to work. This can also greatly reduce the rate of traffic jams in some areas in the municipality.

3.7.5. High taxes on fuel

Some urban problems can also be mitigated effectively by raising the prices of fuel. This could be accomplished by setting higher tax rates. Through the increased price of fuel, people would have an incentive to reduce commuting which in return will reduce pollution in the town and also reduce the rate of traffic

3.7.6. Higher taxes on change in land use.

If people own pieces of land that they now want to use for housing purposes, they have to get a permit for the change in the land use. These changes in land use could be taxed at a higher rate so that it would become more unattractive for people to turn their agricultural land into housing land.

3.7.7. Assure affordable housing

Housing prices are a big issue, especially in big cities. It is quite common that people are not able to afford a house with an average income in these areas. Thus, people have the incentive to leave and settle down in areas with lower housing expenses. Local authorities may therefore subsidize living in these areas in order to prevent people to leave.

3.7.8. Education

Education is an important incentive for people to stay in the cities, especially for families with young children. If the level of education is much better in cities, people will have an incentive to stay or move there. Hence, local authorities have to make sure that the education level in cities is better than in the suburbs in order to make people stay in the cities. The local authorities have put in some measures to mitigate this problems though not quite effective.

3.8. Conclusion

Hypothesis 3 states that "the use of alien urban development norms in Cameroon has rendered the process of urbanization in Bamenda less sustainable". To verify this hypothesis, data on respondent's awareness on the existence of urban planning tools (master plan and urban planning documents) in the Bamenda municipality and the relationship between urban planning and observed ground development (matching of actual urban landscape with urban planning tools) is used (Chebe 2019) working on urban problems and planning in Bamenda town.

Table 18 present respondent response awareness to urban planning tools. Results from the table shows that a greater percentage of the respondents in the field answered yes with 53% of the respondents standing on this view and 42% of the respondents in the field rejected this view that they are not aware of urban planning tools in the Bamenda municipality while only 4% of respondent stood on the view of no idea for reasons best known to them. The researcher foresees that they are some of them with ignorance of urban problems in the study area. Further findings revealed that some developmental projects in the Bamenda municipality do not match with urban planning tools. They exist residential houses in some restricted areas of the town like hill slopes of Abangoh and Bamenda-kwe escarpment that do not match with the master plan. Even commercial activities like the street vendors along the up-station road, industrial activities like motor garages and furniture workshops all over the town were observed not to match with the provisions of the master plan. This is an indication of poor implementation of urban planning regulations that have subsequently resulted to urban disorder in the Bamenda municipality.

Apart from ignorance of existence of urban planning tools and their ineffective implementation, finding revealed that, some urban dwellers constructed houses over night without the knowledge of council officials which do not respect town planning regulations. Others who are aware of these regulations refused to respect them for selfish reasons. Filed work also review that, the vision of urban planning in Bamenda is almost impossible as most of them are adopted from the western countries and so makes it illusion since the level of technology is not the same with that of the western countries. The towns in the western worlds are built in line with their temperature. The constant floods in the town are as a results of poor town planning. The type of temperature and rains that we have here are different from that of Europe. We generally have high intensity of rain and our nature of slopes are different. At such, water channels, drainage were supposed to be built using our type of temperature. Based on this, hypothesis 3 which states that; "the use of alien urban development norms in Cameroon has rendered the process of urbanization less sustainable" is accepted to an extent.

GENERAL CONCLUSION

SUMMARY OF THE RESEARCH FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Introduction

Having brought out the research problem, research objectives, and hypothesis, the evolution of urbanization in relation to urban planning, the implementation of urban planning regulation and problems of urbanization due to urban planning deficiencies in the Bamenda municipality, this chapter examine the summary of the research findings, so as to provide recommendations for sustainable urbanization in the Bamenda municipality.

Testing of research hypotheses, analysis and discussion of results

The testing of each hypothesis was based on the theory of perception in action that was drawn from respondents' views and quantified through the survey instrument administered. The notion that perception is requisite property of animate action; that without perception a research would be unguided, and without taking an action on that perception, it would served no purpose constituted the departure point for series of verification and validation of the stated hypotheses. Knowledge is the foundation of a process in which attitude, norms and perceptions of possibilities to act are carefully monitored to clarify and decide between behavioral alternatives.

Several field techniques, intrutments and methods were used to collect the data required to achieved the given objectives and test the hypotheses. This entails the use of a variety of data gathering tools such as questionnaires, interviews guide, a digital phone for recording and taking of photos, GPS to collect way points, ArcGIS and Adobe illustrator to draw maps, and an eye for observing phenomena. The quantitative data gathered through the field inquiry was summarized into tables, graphs and maps were utilized to support arguments and illustrate facts. The inferential correlation index was used to evaluate the null hypotheses (1, 2 and 3), resulting in judgements about the validity of the claims included in these hypotheses as per the following correlational ranges

- 700 to 1.000 show a high degree of association
- 400 to 0.700 show a substantial relationship
- 200 to 0.400 show a low degree of correlation
- <200 show a neglible relationship

Research Hypothesis 1

Research hypothesis 1 guided the study to collect relevant data to establish a link between ill adapted urbanization process and socioeconomic challenges and the extent to which urbanization process is negatively affect the socioeconomic of Bamenda town. The urban population of Bamenda has witnessed a significant increase in its population over the years due to natural increase and rural exodus. This increase have greatly affected the people in terms of informal settlement, waste saturation, traffic jam, job scarcity and overcrowding, limited space and among others.

To verify the validity of this assertion, the research hypothesis was presented in two different forms. That is, the alternative (Ha) and null (Ho) hypotheses:

Alternative hythpothesis (Ha): socioeconomic challenges in Bamenda town are of different types which results from weaknesses of urban laws and are caused by high birth rate and in-migration

Null hypotheses (Ho): socioeconomic challenges in Bamenda town are not of different types and are not caused by weakness of urban laws and high birth rate and in-migration.

Table 21: Respondents' view on how urbanization process have caused socioeconomic challenges in Bamenda town

Municipalities	Quarters	Effective resp.	Urbanization process has led to socioeconomic challenges	
Municipalities			**Yes (x)**	**No (Y)**
Bamenda I	Abangoh Ntangang	8	3	5
	Bamenda-nkwe	20	11	9
Bamenda II	Mulang	17	8	9
	Lower ngomgham	50	38	12
	Ntamulung	25	12	13
Bamenda II	Sisia 1	7	2	5
	Sisia 2	18	10	8
	Mbefi	5	3	2
	Mbesoh	2	2	0
Total		**152**	**89**	**63**

Source: Field work, 2023

The alternative hypothesis revealed that socioeconomic challenges of Urbanization in are of different types and are not caused by high birth rate and im-migration. Based on the respondents' views in table 21, research hypothesis 1 was tested using "Yes", "No" options. According to the results of the respondents' view, 89 responded yes and 63 responded no.

The validity of hypothesis 1 is also tested using the correlation index analysis which have the condition -1$\leq rxy \geq 1$. This means that if the calculated correlation is less than or equal to negative one (≤ -1), it signifies that the hypothesis has not been affirmed (null). On other hand, if the calculated correlation is greater than or equal to one (≥ 1), it means the hypothesis has been affirmed (attained).

Table 22: Contingency

Municipalities	**Quarters**	**Effective resp**	**Yes (x)**	**No (Y)**	∑ x	n	x^-	x^-2	nx^-2	$\sum x^-2$	$\sum xy$	nxy^-	**rxy**
Bamenda I	Abangoh Ntangang	8	3	5	89	9	9.9	98.01	882.09	7938.81	5607	623.7	**0.99**
	Bamenda-nkwe	20	11	9									
Bamenda II	Mulang	17	8	9	∑ Y	n	Y^-	Y^-2	ny^-2	$\sum y^-2$			
	Lower ngomgham	50	38	12	63	9	7	49	441	3961			
	Ntamulung	25	12	13									
Bamenda II	Sisia 1	7	2	5									
	Sisia 2	18	10	8									
	Mbefi	5	3	2									
	Mbesoh	2	2	0									
Total		**152**	**89**	**63**									
Mean			**9.9**	**7**									

Source: Drawn from table 22

Where rxy= correlation-index, $\sum \square = sum, x = mean\ of\ x$

Y-mean of y-n number of occurrence

$$rxy = \frac{\sum xy - nxy^-}{\sqrt{(\sum x^-2 - nx^-2)(\sum Y^-2 - ny^-2)}}$$

formular = rxy=

$$rxy = \frac{4983.3}{\sqrt{(7056.72)(3520)}}$$

$$rxy = \frac{4983.3}{\sqrt{24839654.4}}$$

$$rxy = \frac{5607 - 623.7}{\sqrt{(7938.81 - 882.09)(3961 - 441)}}$$

$$rxy = \frac{4983.3}{4983.94}$$

$$rxy = 0.99$$

From the inferential analysis on table 22, the results of the calculated rxy-value of 0.99 ties with 89 “yes” response and 63 “no” responses (table 21). As such, alternative hypothesis is retained while the null hypothesis is rejected. This reveal that the ill adapted urbanization process in Bamenda town have negatively affected the socioeconomic life of it population as seen through saturated waste, traffic jam, crowdness, limited space, scarcity of portable water and inadequate power supply.

The correlation of the manifestation and consequences of ill adapted urbanization process in Bamenda town is clearly visible with bad stage of the road as shown in plate 1 and 2, and table 10 and 11. The manifestation and consequences of ill adapted urbanization in Bamenda town links with Malthus population theory which state that population multiples geometrically while food and other resources multiples arithmetically; and if it is not checked it may lead to social crisis.

Research hypthosis 2

Research hypothesis 2 is aimed at examing how the uncontrolled urban development process in Bamenda town is negatively affecting the urban environment . The hypothesis state that “the uncontrolled urban development process in Bamenda is affecting the urban environment negatively”. This includes, environmental consequences like loss of biodiversity, land degradation, poor disposal of waste which lead to land pollution, loss of agricultural land, floods and landslide. This is caused by rapid population growth and inadequate management strategies. To verify the validity of this assertion, the hypothesis was stated in a null form and in an alternative form as shown below.

Alternative hypothesis (Ho) “the application of uncontroll urban development is negatively affecting the environment of Bamenda”.

Null hypothesis (Ha) “the application of controlled urban development has not largely influence the environment of Bamenda”.

Table 23: Respondents view on Environmental problems

Quarters	Municipalities	Effective resp.	Environnemental problems	
			Yes x	No
Abangoh Ntangang	Bamenda I	8	2	6
Bamenda-nkwe		20	11	9
Mulang	Bamenda II	17	10	7
Lower ngomgham		50	32	17
Ntamulung		25	12	13
Sisia 1	Bamenda II	7	4	3
Sisia 2		18	11	8
Mbefi		5	0	5
Mbesoh		2	1	1

Source: Field work, 2023

The rapid population increase and uncontrolled urban development process in Bamenda town has caused a lot of damages to the environment of Bamenda like loss of Agricultural land, land degradation, loss of biodiversity, land pollution, constant increase of natural disasters like floods and landslide, urban sprawl, and poor waste disposal. The validity of hypothesis 2 is also tested using a correlation index analysis in (table 24).

Table 24: Correlation index analysis of the environmental challenges of urbanization in Bamenda

Quarters	Municipalities	Effective resp.	Environnemental problems									
			Yes x	No	∑×	n	x^-	x^-2	nx^-2	$\sum x^-2$	$\sum xy$	nxy^-
Abangoh Ntangang	Bamenda I	8	2	6	83	9	9	81	729	6889	572	623.7
						rxy=-0.01						
Bamenda-nkwe		20	11	9								
Mulang	Bamenda II	17	10	7								
Lower ngomgham		50	32	17	∑Y	n	Y^-	Y^-2	ny^-2	$\sum y^-2$		
Ntamulung		25	12	13	69	9	7.7	59.29	533.61	4761		
Sisia 1	Bamenda II	7	4	3								
Sisia 2		18	11	8								
Mbefi		5	0	5								
Mbesoh		2	1	1								

formular=

$$rxy = \frac{\sum xy - nxy^-}{\sqrt{(\sum x^-2 - nx^-2)(\sum Y^-2 - ny^-2)}}$$

$$rxy = \frac{572 - 623.7}{(6889 - 729)(4761 - 533.61)}$$

$$rxy = \frac{-51.7}{(6160)(4227.39)}$$

$$rxy = \frac{-51.7}{\sqrt{}26040722.4}$$

$$rxy = \frac{-51.7}{5103.0}$$

$$rxy = \mathbf{-0.01}$$

The high level of correlation ties with the 83 respondents which revealed that rapid urbanization and uncontrolled urban development process is negatively affecting the urban

environment of Bamenda as against 69 respondents as illustrated in table 24. According to the inferential analysis of the respondents' shown in table 24, it is noticed that, the correlation of $\leq -1rxy \geq 1$ has been fulfilled which means that rapid urbanization and uncontrolled urban development process have negatively affected the natural environment of Bamenda with different environmental problems.

As a result, the null hypothesis (Ho) is distorted and the alternative hypothesis (Ha) retained. As indicated by the calculation rxy value of "-0.01. There is high degree of association between the uncontrolled urban development process and contemporary factors as causes of environmental problems in Bamenda town.

Research hypothesis 3

Research hypothesis 3 was the last hypothesis that guided this research work. It stated that, "the use of alien urban development norms in cameroon has rendered the process of urbanization in Bamenda less sustainable". This is because despite the measures used to solved these urbanization challenges as shown in chapter 3, urban problems continue resurfacing. The causes of this problems are summarized in one main factor, which is poor implementation of urban laws. This hypothesis therefore shows a relationship between urban challenges and management strategies used. To verify the validity of this assertion, the correlation analysis was used. This was done by placing the hypothesis in null and alternative forms as seen below.

Alternative hypothesis (Ho) "the use of alien norms and poor implementation of urban laws have rendered the process of urbanization in Bamenda less sustainable".

Null hypothesis (Ha) "the use of alien norms and poor implementation of urban laws have not rendered the process of urbanization in Bamenda less sustainable".

Table 25: Respondents view on the effectiveness of urban development laws in Bamenda town

Selected quarters in Bamenda municipality	Are strategies put in place to solve urban problems effective ?	
	Yes	No
Abangoh Ntangang	9	10
Mulang	9	10
Ntamulung	10	7
Lower Ngamgham	12	9
Sisia I	7	4
Sisia II	6	4
Mbefi	7	10
Mbeso	6	11
Bamenda-nkwe	20	20
Totals	86	85

Source: Field work, 2023

The manifestation of poor implementation of urban laws has caused socioeconomic and environmental challenges as seen in the town of Bamenda. These challenges have slow down some economic activities, slow the rate of economic investement, and increase urban hardship in the town. The validity of hypothesis 3 is also tested using the correlation index analysis (table 26).

Table 26: Contingency table

Selected quarters in Bamenda municipality	**Yes**	**No**	**∑x**	**n**	**x^-**	**x^-2**	**$n^{x^-}2$**	**$\sum^{x^-}2$**	**$\sum^x y$**	**nxy^-**	**rxy**
Abangoh Ntangang	9	10	86	9	9.5	90.25	812.25	7396	7310	89.3	**1.1**
Mulang	9	10									
Ntamulung	10	7									
Lower Ngamgham	12	9	∑Y	n	Y^-	Y^-2	ny^-2	$\sum y^-2$			
Sisia I	7	4	85	9	9.4	88.36	795.24	7225			
Sisia II	6	4									
Mbefi	7	10									
Mbesoh	6	11									
Bamenda-nkwe	20	20									
Totals	86	85									

Source: Drawn from table 25

formular

$$rxy = \frac{\sum xy - nxy^-}{\sqrt{(\sum x^-2 - nx^-2)(\sum Y^-2 - ny^-2)}}$$

$$rxy = \frac{7310 - 89.3}{\sqrt{(7396 - 812.25)(7225 - 795.24)}}$$

$$rxy = \frac{7220.7}{\sqrt{(6583.75)(6429.76)}}$$

$$rxy = \frac{7220.7}{\sqrt{42331932.4}}$$

$$rxy = \frac{7220.7}{6506.3}$$

$$rxy = 1.1$$

The high level of correlation ties with 85 respondents which revealed that the use of alien norms and poor implementation of urban laws have rendered the process of urbanization in Bamenda less sustainable as against 84 respondents' as shown in table 25. According to inferential

analysis of the respondents' shown in table 26, it is noticed that, the correlation of $\leq -1\ rxy \geq 1$ has been fulfilled which means that the the use of alien norms and poor implementation of urban laws have greatly rendered urbanization in Bamenda less sustainable.

As a results, the null hypothesis (Ho) is distorted and the alternative hypothesis (Ha) retained. As indicated by the calculated rxy value of 1.1. There is high degree association between the alien norms poor implementation of urban laws as causes of poor urban development in Bamenda.

General Conclusion

Urban sustainability in the 21st century should be pivotal to urban planners especially in developing countries. This is an era where western countries are already operating within the concept of "smart cities" while developing countries Cameroon inclusive are still facing challenges of urban sustainability particularly the of Bamenda municipality. Informal and haphazard settlement, improper waste management, illegal occupation of public spaces, pollution just to mention a few, still characterizes our towns. The state organs and bodies concerned into the process of urban planning and dealing with the challenges needs to take quick and urgent actions to deal with such urban issues that do not even fits into the currents debates of this era. The paradigm shift from economic development to sustainable development requires that the city be built on a more respectful interrelationship of economic, social and environmental well-being. Conventional planning is about nudging the accommodating prevailing trends, but ecosystem planning is about choosing and pursuing a desirable future. It is clear that a new way of addressing urban problems is needed to encourage inter-jurisdictional decision-making, overcome the present fragmentation, isolation with integrated planning and implementation and to ensure consultation, facilitate cooperation, partnering, involving the widest range of stakeholders effectively and openly in the planning process to initiate long term monitoring, feedback, and adaptation of plans to assess what happens to communities and ecosystems as plan implementation unfolds.

Ngoran et al (2015) concluded that, urban planning in Douala and Cameroon in general is built in good laws and regulation but its implementation is inadequate. This is complemented by Ndi et al (2017) who held that, having a proper regulatory framework is not enough, but a sustained implementation and enforcement is more important. Results from this study corroborate the above findings as field work revealed that Bamenda is enshrined in good laws but implementation and enforcement is inadequate as seen with the outdated 1985 master plan

that was neglected and recent master plan whose existence is largely not known by the population. The situation is further complicated by the fact that urban planning in Bamenda was done at a time urban challenges had engulfed the town. The time lapse between the old and recent resent master plan (1985-2014) was too long leading to the emergence of disorganized and haphazard developments which is difficult to redress. Urban planning deficiencies in Bamenda has therefore resulted to environmental socioeconomic and planning problems which hinders the sustainable urbanization of the town.

More so, population adaptation to urban problems planning strategies and effects in Bamenda municipality with all the stakeholders involved in urban planning and implementation of urban planning laws and the master plans in Bamenda municipality should be a focal point to both the government and the city council of Bamenda. Also, all the strategies used by the people and local planning policies should be taken into serious consideration because it is these strategies that can solve urban challenges in the Bamenda municipality.

In a nutshell, the situation of urban challenges in Bamenda municipality is largely as a result of inadequate policy implementation and enforcement, insufficient flow of information to the population and tradition form of land acquisition. To curb urban problems and improve the sustainable growth of the study area through planning is a major call for concern, the researcher recommends the effective implementation of the recent master plan of Bamenda, the development of diverse methods of information dissemination to the population on urban planning regulation, putting in place a public structure that ensure transparency and accountability in the management of urban funds. Also, the existing town planning laws should be reviewed and made more participatory while decision making should be made more inclusive with all stakeholders in the town involved.

RECOMMEDATION FOR SUSTAINABLE URBANIZATION IN BAMENDA MUNICIPALITY

General Recommendation

The findings of this study revealed that rapid population growth, consummation, and poor waste disposal are some of the challenges to sustainable urban development in Bamenda. This study therefore recommends amongst other measures the strict implementation of planning regulation and the development of a roadmap that encapsulate the sustainable city development goals. In addition, the recycling of food and other solid wastes, reduction of industrial waste, enforcing air, and noise pollution controls, increasing investment in services

in rural areas targeted to reduce rural-urban migration and a reduction in the national population growth rate are some of the measures that can be leveraged to achieve sustainable urban development in Bamenda.

Furthermore, land use maintenance measures such as ecological land use planning, open space preservation, tree planting and the creation of community gardens can be a cornerstone for sustainable urban development. Other specific recommendations are suggested as follows:

For parks: parks can provide places to gather, rest, meditate, and rejuvenate and if large enough, places to play. They should be well distributed throughout the city and other urban areas. Community gardens should be encouraged by greening-the-city movement.

For water management: City water resources are limited, wastage from leaks and abuse is high, and water quality is not monitored by WHO international guidelines for drinking water. Much remains to be done in terms of quantity, quality and financing. Certainly, efforts at reducing waste and improving water efficient are imperative. Water conservation initiatives involving metering and leak detection work by water agencies, as well as customer demand management strategies, must be supported by public education and incentive programs. There is a need to maximize the use of available water supplies before attempting to explore and expand new supplies at higher costs.

For solid waste management: The solution is generally considered to be prevention rather than clean-up, and the preferred options are; Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Re-manufacture Repurpose, and Recycle, Recover.

For energy: one of the strategies in any energy conservation program is the use of renewable energy options, such as photovoltaic (solar electric) power. Such panels produce electricity for independent systems with batteries for storing energy or supplying electricity to the power grid; solar thermal energy: solar hot-water systems typically provide water for showers and baths, and some solar thermal projects are designed to convert heated water into electricity for rural homes, and farms. Also, wind farms-cluster of wind turbines generate power for the electrical grid in some countries. Biomass: Agricultural plants or organic waste provide fuel-methanol or ethanol for use as an alternative for most oil or gas needs. Further recommendation goes as follow;

Recommendation to public authorities

Public authorities here include the different public stakeholders involved in urban planning (municipal councils, the Bamenda city council and the different ministries). The following suggestion may help to reduce urban challenges and improve the sustainable urbanization of Bamenda if enforced by these public authorities.

Effective implementation of the master plan

The new master plan of Bamenda town is enshrined with sound planning policies that can reduce the rate of urban problems if effectively implemented. The issue of good paper work but poor ground execution in Cameroon like the case of the 1985 Bamenda master plan that was neglected and abandoned is the problem. Good policies are always developed in the country but their implementation is a problem. Most of the short term projects earmarked in the new master plan to be executed from 2011-2015 are still to be realized. Unfortunately, construction of new houses is still on-going in the risky neighborhood yearly. If the authorities of the city council and MINDHU effectively implement the new master plan and prevent further settlement in these risky quarters, a sustainable urbanization may be achieved in the town.

Diverse method for sensitization of town planning regulation and the master plan.

Findings revealed that many urban dwellers in Bamenda town have little knowledge on the existence of urban planning regulations and the master plan. The development of diverse method for the sensitization of the population on urban planning regulations and the master plan like the use of mass media communication (Radio and TV programs on the City council projects and policies), city council publication like a magazine containing their projects and policies and organization of community base seminars especially to those in risky environment may help reduce the rate of urban problems in Bamenda. Thus the BCC and MINDHU who are the main actors in urban planning needs to step up their methods sensitization so that the population can be aware of their plans and policies.

Creation of a structure that ensure transparency, accountability and enforcement of policies

One of the problems limiting the effective implementation of urban planning norms in Bamenda is the lack of strict enforcement mechanism to defaulters of urban planning norms. In this light, the research recommends the establishment of an enforcement and implementation structure that deal with council and state officials who mismanage public funds and defaulters

of urban planning regulation by punishing them according to the law. This structure should also carry out regular monitoring and evaluation of town planning norms and its projects to ensure their effective implementation, accountability and transparency

The institution of an urban Growth Boundary UGB in Bamenda

The institution of an UGB in Bamenda as proposed in the idea of smart growth through the establishment of a greenbelt especially in the risky areas by the BCC and other state agencies may also help to reduce urban problems in Bamenda. This UGB show were the city is expected to grow and end. Modification of the UGB could only be made if the state confirms the expansion of the town following planning goals and standards. Some quarters like Sisia and Abangoh could totally be transformed into a green zone to limit the encroachment of people into these areas. The UGB should be well demarcated showing the limits of expected growth. This may eventually help to control urban problems in the town

Creation of rural development programs

One of the main causes of urbanization in Bamenda town and eventually urban challenges is the high rate of rural exodus in the country. Many young people in the villages of the North West region and other parts of the country see Bamenda town as a place to improve their lives. Most of them migrate to the urban center without any vision or what to do. This results to high unemployment in the town forcing some of these migrants to settle in low quality areas such as risky zones. The formulation and implementation of rural development programs by state agencies like ministry of youth and civic education and the ministry of agriculture and rural development may help retain youths in rural areas and limit the number of people migrating in to Bamenda. This may eventually help to reduce urban challenges in the town.

Recommendation to the population

The population of Bamenda equally have a role to play in controlling urban challenges in the study area. The following recommendation should be taken into consideration by the urban population to limit urban challenges in the town.

Respecting urban planning regulation

The non-respect of urban planning regulations by the population of Bamenda has aggravated. Most urban dwellers do not respect urban planning regulations. They violet these rules and carryout development projects in restricted areas like reclamation of land in Ngongham and Mulang for house construction. In addition, Sisia and Abangoh neighborhood

are declared restricted areas for settlement, known by urban dwellers yet they continue to construct residential houses in these neighborhoods. It is thus recommended that, urban dwellers should play their role by respecting urban planning regulations in other to limit urban challenges in the town.

Infilling of the town

Land in many planned residential areas in Bamenda is poorly manage with vast unoccupied land between buildings in some areas. They exist vast unoccupied land in some planned residential area owned by people who are not willing to sell it for house construction in Bamenda. This forced some urban dwellers to be involved in sprawl. It is recommended that, land policies especially the land tenure system in Bamenda should be redressed and infilling of houses carried out as proposed in the smart growth theory. This should be done in planned residential areas like; Mulang, Ngomgham, Alakuma and Nkwen that are not prone to any risk but having unoccupied land. Infilling of houses within the town may help to reduce the rate of sprawl in to ecologically fragile areas.

Recommendation to NGOs, other organization and traditional authorities

Non-governmental organization CBOs and traditional authorities also have a role to play in reducing urban challenges in Bamenda. The following recommendations should be considered by NGOs and other organization interested in urban challenges and planning in the study area.

Educating the population on urban planning norms.

NGOs, CBOs and traditional rulers can help to reduce urban challenges by educating the population on the ills of the disrespects of town planning regulations and the dangers associated with urban challenges. It is recommended that, NGOs and CBOs in the field of planning should organize regular seminars and sensitization forums especially with the population in restricted areas to educate them on the ills and dangers of living in restricted zones. This may help limit urban challenges in Bamenda.

Carrying out research and forwarding proposals to the state authorities

It is also recommended that NGOs, CBOs and traditional authorities interested in sustainable urban development should carry out regular research on planning and publish their findings. They should also work in collaboration with state authorities by providing information relating to un-control development in their communities. Example, people

construct houses in restricted zones without the knowledge of the city council officials since there are not close to all the communities. The traditional authorities and CBOs can limit settlement in risky zones by providing regular information to the city council on development that are not in conformity with town planning regulation before their completion.

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APPENDICES

THE UNIVERSITY OF YAOUNDE 1
****
FACULTY OF ARTS, LETTERS AND SOCIAL SCIENCES
****
GEOGRAPHY DEPARTMENT

UNIVERSITE DE YAOUNDE 1
****
FACULTE DES ARTS, LETTRES ET SCIENCES HUMAINES
****
DEPARTEMENT DE GEOGRAPHIE
****

A SURVEY QUESTIONNAIRE

TOPIC: CHALLENGES OF URBANIZATION AND SUSTAINABLE MANAGEMENT

STRATEGIES IN THE BAMENDA MUNICIPALITY.

All information gathered is strictly for academic purpose and will be uses confidentially to serve the purpose it deserves.

Questionnaires on challenges of urbanization and sustainable management strategies.

Instruction: Answer the following questions by marking an "X" in the bracket of the correct answer and by filling the space provided.

Section A: Hypothesis 1 "I'll adapted urbanization process in Bamenda town is negatively affecting the socioeconomic life of the urban population in the town"

1) Level of education? A) uneducated formally ( ), b) primary education ( ), c) secondary education ( ), d) higher education ( )
2) Which of this categories of school are cheaper? a) private school ( ), b) Government school ( )
3) Where do most people sent their children? a) private schools ( ), b) Government schools ( )
4) Are you employed? a) Yes ( ), b) No ( )
5) Under which sector do you operate? a) formal sector ( ), b) informal sector ( ), c) decisive ( )
6) If you operate under the informal sector, what is your average monthly income? a) 15000-20000frs ( ), b) 25000-30000frs ( ), c) others ( )

7) If you operate under the formal sector, what is your average monthly salary? a) 45000-55000frs ( ), b) 56000-65000frs, c) 66000-100000frs ( ), d) above 150000frs ( )

8) Which is your area of origin?

_____

_____

_____

9) What is the nature of your accommodation? a) Rented ( ), b) personal ( ), c) communal ( ), d) owned ( ), e) Government owned ( ), f) others ( )

10) How affordable are basic commodities in your area_____

_____

_____

11) Which type of waste is mostly deposited in your nearest dump site? a) solid waste ( ), b) liquid waste ( ), c) non-biodegradable waste ( ), d) biodegradable waste ( )

12) Are there enough dustbins to empty the waste? a) Yes ( ), b) No ( )

13) How long do the waste stay in their dump sites before collection? a) one day ( ), b) two days ( ), c) three days ( ), d), more than one week

14) Is there enough medical facilities in your area? a) Yes ( ), b) No ( )

15) Do you intend to continue living in this area? a) Yes ( ), b) No ( )

16) If yes, why? And if No why?_____

_____

_____

Hypothesis 2: The uncontrolled urban development process in Bamenda is affecting the environment negatively

17) What caused you to settle in this area? a) Family ties ( ), b) cheap land ( ), c) inheritance ( ), d) nearest to job site ( ), e) social ills of the city center ( )

18) How long have you been living here? a) Less than 10years ( ), b) 11- 20years ( ), c) 21-30years ( ), d) 30years and above ( )

19) Are you facing environmental problems due to urban deficiencies in Bamenda? a) Yes ( ), b) No (

20) If yes, can you identify some of these problems a) floods ( ), loss of biodiversity ( ), c) deforestation ( ), d) lack of potable water ( ), f) pollution ( ), g) decline in food supply ()

21) How do you cope with these problems you are facing in this area?-

_____

_____

_____

22) Do you intend to continue living in this area? a) Yes ( ), b) No ( )

23) If yes, why? And if No, why?

_____

_____

_____

Hypothesis 3: The use of alien urban development norms in Cameroon has rendered the process of urbanization in Bamenda less sustainable

24) Are you aware of the existence of urban planning laws in Cameroon? a) Yes ( ), b) No ( )

25) Are you aware of the existence of urban planning tools like the urban master plan of Bamenda? Yes ( ), b) No ( )

26) Do you think these urban planning tools are sustainable can render urbanization in Bamenda sustainable? a) Yes ( ), b) No ( )

27) If yes, why? And if No, why?

_____

_____

_____

_____

28) Are you aware that people are not allow to settle in this area? a) Yes ( ), b) No ( )

29) Was your community and other stakeholders consulted in the development of urban planning regulation? a) Yes ( ), b) No ( ), c) No idea ( )

30) Has your house a plan approved by the Bamenda city council? a) Yes ( ), b) No ( )

31) Is your land registered? a) Yes ( ), b) No ( )

32) If No, why? a) Authorities refused to register it ( ), b) have no money to register it ( ), c) expensive to register ( ), d) procedure to register is too complicated ( ), e) others reasons

_____

_____

_____

33) Are the road and water channels in your area well constructed? a) Yes ( ), b) No ( )

34) If No, what result do you witness during rainy period as a result of this bad state of the roads and poor drainage ways?

_____

_____

_____

_____

Personal identification data

35) In which sub-division do you reside? a) Bamenda I ( ), Bamenda II ( ), c) Bamenda III ( )

36) Sex? Male ( ), b) Female ( )

37) Marital status? a) Married ( ), b) Single ( ), c) Divorce ( ), d) widow ( ), e) widower ( )

38) Age group? a) 15-25 ( ), b) 26-35 ( ), c) 36-45 ( ), d) 46-55 ( ), e) 56-65 ( ), f) 66-75 ( ), g) others ( )

39) How many children do you have? a) Number of boys ( ), b) Number of girls ( ), c) Total ( )

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All information gathered is strictly for academic purpose and will be subjected under confidentially to serve the purpose it deserves.

Interview questions on management strategies administered to the mayor of Bamenda I or his representatives

1) What is the estimated population of your municipality?
2) What strategies are put in place to accommodate this population in relation to town planning?
3) Is your municipality having a town plan?
4) Who are the stakeholders involved in town planning in your municipality?
5) What are the roles of the different stakeholders in the planning of your municipality?
6) Evaluate the extent to which this plan has been implemented?
7) Which company is in charge of waste gathering in your municipality and how effective is this company?
8) What method have been put by the company to facilitate the disposal of waste by the citizens?
9) Is there any company involved in waste recycling in your municipality?
10) Do area witness some challenges due to waste mismanagement maybe in terms of diseases, water pollution and others?
11) Do your municipality have water crisis?
12) Is there hope to fully implement the Bamenda city plan in all the zones in the nearest future?

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Interview questions on Bamenda town planning to the Mezam Divisional Delegate of Housing and Urban Development or his representative

1) What is the role of MINDHU in urban planning?
2) Which are the stakeholders MINDHU is working with, to ensure effective planning in Bamenda town?
3) What is the role of these stakeholders in the field of planning in Bamenda town?
4) Is there any difficulties by MINDHU working with these stakeholders? If yes, what are the difficulties?
5) What role does MINDHU play in the issuing of land tittles and building permits in the town?
6) What are the steps to obtain a land and building permit from MINDHU?
7) What is MINDHU doing to restrict habitation of risky zones exposed to the risk of natural hazards such as floods in Bamenda town?
8) What was or were the reasons for the abandonment of the first master plan of Bamenda?
9) What efforts MINDHU putting in place to ensure the full implementation of the recent master plan?
10) What recommendation can be put in place to ensure effective planning in Bamenda town?

Research Attestation

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DEPARTMENT OF GEOGRAPHY
P.O BOX 755 Yaoundé
Tel. 22 22 24 05

ATTESTATION DE RECHERCHE

Je soussigné, **Pr. PAUL TCHAWA**

Chef du Département de Géographie, atteste que

Monsieur : **MARX MBIDZENYUY LUKONG**

Matricule : 18F072

Est inscrit(e) au cycle de : **MASTER** **(2022-2023)**
Spécialité : Marginalité, Stratégie de Développement et Mondialisation.

Et prépare une thèse sur le sujet : **CHALLENGES OF URBANIZATION AND SUSTAINABLE MANAGEMENT STRATEGIES IN BAMENDA MUNICIPALITY.**

A cet égard, je prie toutes les personnes ressources et tous les organismes sollicités de lui réserver un bon accueil et de lui apporter toute l'aide nécessaire à la réussite de cette recherche dont la contribution à l'appui au développement ne fait pas de doute.

Fait à Yaoundé le 09 MAI 2023

09 MAI 2023

LE CHEF DE DEPARTEMENT

UNIVERSITE DE YAOUNDE I
Département de Géographie
Le Chef de Département
FACULTE DES ARTS, LETTRES ET SCIENCES HUMAINES

Clement Anguh Nkwemoh
Associate Professor (M.C)
University of Yaoundé I