Housing Situation in the Bamenda Urban Space, Challenges and the Way Forward

Nformi Beatrice Maluh[1*], Balgah Sounders Nguh[1] and Jude Ndizifon Kimengsi[2]

[1]*Department of Geography, University of Buea, P.O.Box. 63 Buea, Cameroon.*
[2]*Department of Geography, The University of Bamenda, P.O.Box 39, Bambili, Cameroon.*

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ABSTRACT

Housing is a fundamental human need, until now, making sure that every person has access to good quality housing is a grave challenge facing Bamenda Urban Space. This paper seeks to examine the housing situation and challenges to housing development in Bamenda Urban Space. The study adopted the mix method approach which involves triangulation of quantitative and qualitative methods of data collection. Primary data were obtained from field observations, interviews and questionnaires administered to households. Secondary data were obtained from relevant official documents, published and unpublished sources. Satellite imageries and ArcGIS were used to describe the pattern of growth in built-up areas between 1986 and 2019. Data from questionnaire was entered using Epi Data Version 3.1, analysed using the Statistical Package for Social Science Standard version 21.0 and presented in the form of tables, figures, plates and maps. Findings on housing situation revealed that, although the housing structures has improved, the housing designs, technology and level of maintenance are still low. The irregularity and unreliability in water supply, electricity supply and waste management systems have turned most households to alternative sources with poor quality. Urbanisation and urban growth are occurring without a

Corresponding author: E-mail: nformibety@yahoo.com;

concurrent increase in housing supply resulting to congestion, deterioration of basic services, pollution, inaccessibility, social vices, lack of privacy, poor ventilation and natural disasters amongst others. The paper, therefore, calls for the rehabilitation and renovation of dilapidated housing structures, provision of basic services, construction of low-cost housing, encourage financial institutions to grant loans to real estate developers at low interest rate.

1. INTRODUCTION

The importance of housing goes far beyond the physical structure, it integrates the quality of the housing environment and the provision of social amenities. Good quality housing enhances socio-economic development and well-being of the inhabitants and the city at large. Access to good quality housing is essential for human well-being, yet in many cities of the Developing Countries, a large proportion of the population still occupies housing with rudimentary materials [1]. It is reported that more than 1.6 billion persons live in poor housing conditions worldwide while 2.4 billion do not have good sanitation facilities [2]. Housing problems are not only cantered around deficient housing quantity but is today more directed to poor quality housing and lack of sustenance. The built-up areas in urban centres in Developing Countries especially the inner-cities are decaying rapidly. This is attributed to the population growth, economic depression and degeneration of basic amenities. The rate of urban growth in developing countries is a mismatch with the rate of housing development and service provision. Abrams [3] posited that "despite man's unprecedented progress in industry, education and the science, the simple refuge (house) affording privacy and protection against the elements is still beyond the reach of most members of the human race".

The rate of urbanisation in Cameroon moved from 28.3% in 1976 to 55% in 2016, with a population growth rate of 2.5% and urban population growth rate at 4% per year [4]. The urbanization process in Cameroon can be attributed to natural increase, rural-urban migration and transformation of rural land into urban land. According to [5], the rapid rate of urban growth in Cameroon has resulted to deficiency in the quantity of houses. Urban dwellers who cannot afford decent houses are force to settle in low quality houses in the crowded inner-city neighbourhoods.

Bamenda being a primate city in the North West region of Cameroon, plays a significant role as an agent of growth and development through its political, social and economic status and the plethora of opportunities it offers, which attract most rural migrants. A large proportion of migrants who cannot afford decent housing resolve to low quality housing in the inner-city slum neighbourhoods such as Old Town, Ntamulung, Atua-Azire and Ayaba and to squatter settlements on hazard prone zones such as Sisia, Abangoh and Mulang. These neighbourhoods are characterised by poor toilet facilities, waste disposal, housing structure, insufficient supply of electricity, water and access road. Urbanisation and urban growth are accompanied by many socio-economic, and environmental consequences such as biodiversity degradation, loss of prime agricultural lands, traffic congestion, high rates of unemployment amongst others, this paper focus on the effects of urbanisation and urban growth on housing. It is for this reason that this paper seeks to examine the housing situation and focused on urbanisation and urban growth as the major challenge to adequate housing development and propose strategies for sustainable housing development which is imperative for urban planners to design proper housing policies and programmes.

2. LITERATURE REVIEW

It is fundamental to clearly delineate and define the key concepts used in this study. The study uses the definition of housing put forward by the World Health Organization [6] whereby housing embodies not just the structure but also the essential amenities needed to improve living conditions in an environment which is free from diseases and other natural disasters. In order to describe the current housing situation, the study grouped housing quality in two dimensions: the physical structure, that is, the type of housing structure, age of housing, housing condition and the types of materials used in construction. The internal quality which is concerned with the nature of the environment and social amenities such electricity, water, waste disposal, kitchen and toilets facilities were used. Also, the study

uses the urban planning regulations to determine the degree to which the current housing situation complies with the town planning regulations. These are legal documents that lay down conditions to regulate housing development, such as law N_0. 2004/003 of April 2004 to regulate town planning and Law N_0. 1996/12 of August 1996 on environmental management in Cameroon, the Bamenda Master Plan and other international standards laid down by the United Nation Habitat.

In assessing housing conditions, [7] used structural characteristics such as the types of building materials, age of the buildings, toilets, bathrooms, kitchen, water supply, refuse disposal and social amenities such as water and electricity supply, road accessibility, security, health and educational facilities as well as spaces for washing and drying of clothes. The study revealed that the low housing quality was as a result of the rudimentary materials used, poor techniques used and the ineffective planning mechanisms. Also, the insufficient social amenities have resulted to grave environmental, social and health problems.

According to Olotuah [8], the problem of housing shortage has been aggrandized by urbanisation,

economic stagnation, hikes in land and housing prices, deterioration of social amenities, and the ineffectiveness of urban government and other planning agents in the application of planning regulations. Considering that demand for housing is far more than supply, the urban poor who cannot compete for the limited available housing units with the wealthy are compelled to move to slums and squatter settlements where they either rent or construct very poor-quality housing. This correspond with the work of [9], who opines that there is a positive correlation between urban growth and housing problems in Nasarawa State.

The sustainable housing framework was proposed for this study. It provides an understanding of the components and strategies to achieve sustainable housing, and stresses on the formulation of new and sustainable housing policies and the proper implementation of such policies by private and public housing developers. According to [10], Sustainable housing is shelter which is healthy, safe, affordable and secure within a neighbourhood with access to piped water, sanitation, drainage, transport, healthcare, education and child development. In a neighbourhood that is free from any natural hazards and where there is ease of interaction and the maintenance of cultural values.
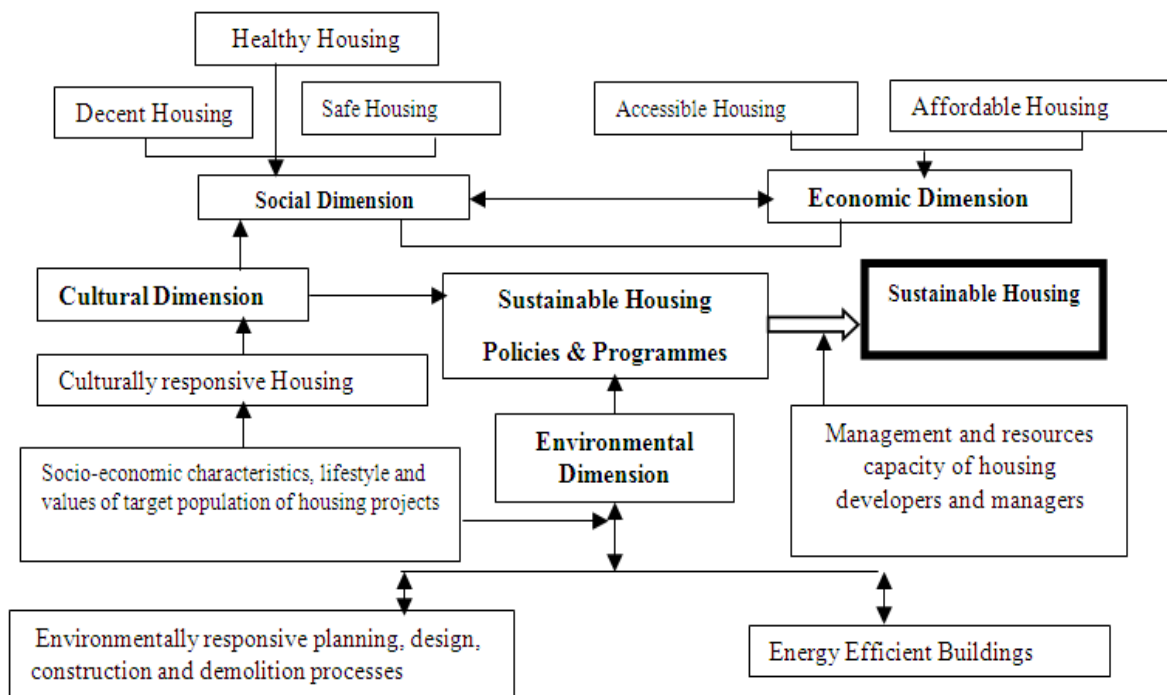

Fig. 1. The Framework for Understanding Sustainable Housing [11]

The framework integrates all the four pillars of sustainable development. Socially, housing is sustainable when it is decent (permanent structure, good condition, good quality ventilation, kitchen, toilet, water, electricity and waste disposal facility), safe (window protectors, availability of security light and safe from hazards) and healthy (good quality air, adequate lighting, noise insulation, privacy, accessibility, free from health-related issues). Housing is culturally sustainable when the design and technology reflects the people's cultural values. Economically, housing is sustainable when it is accessible (to all age, sex, class and income levels) and affordable (deals with government involvement in the housing sector through the provision of incentives, encourage housing finance, upgrading schemes, and the effective implementation of housing laws and regulation). Housing is environmentally sustainable when the technology and appliances used in construction are environmentally friendly.

This framework gives this study its significance as it agrees with Goal 11 and Target 11.1 of the sustainable development goals. It is therefore,

imperative to apply sustainable development principles to housing development. In order to curb the housing problems in Bamenda Urban Space, the current housing situation and the constraints to housing development were examined in other to make recommendations for sustainable housing development given the multi-faceted nature of housing. The results of this study will be of relevance to planners, policy makers and other government agencies involve in housing development as it will bring to light the housing situation and problems which is a step to solving the problems.

3. MATERIALS AND METHODS

3.1 Study Area

Bamenda serves as the Regional Headquarter of the North West region of Cameroon and lies between latitudes 5°55" and 5°58" North of the equator and longitudes 10°09" and 10°11" East of the Greenwich Meridian. Bamenda is made up of three Sub-divisions, namely, Bamenda I, Bamenda II and Bamenda III as seen on Map 1.
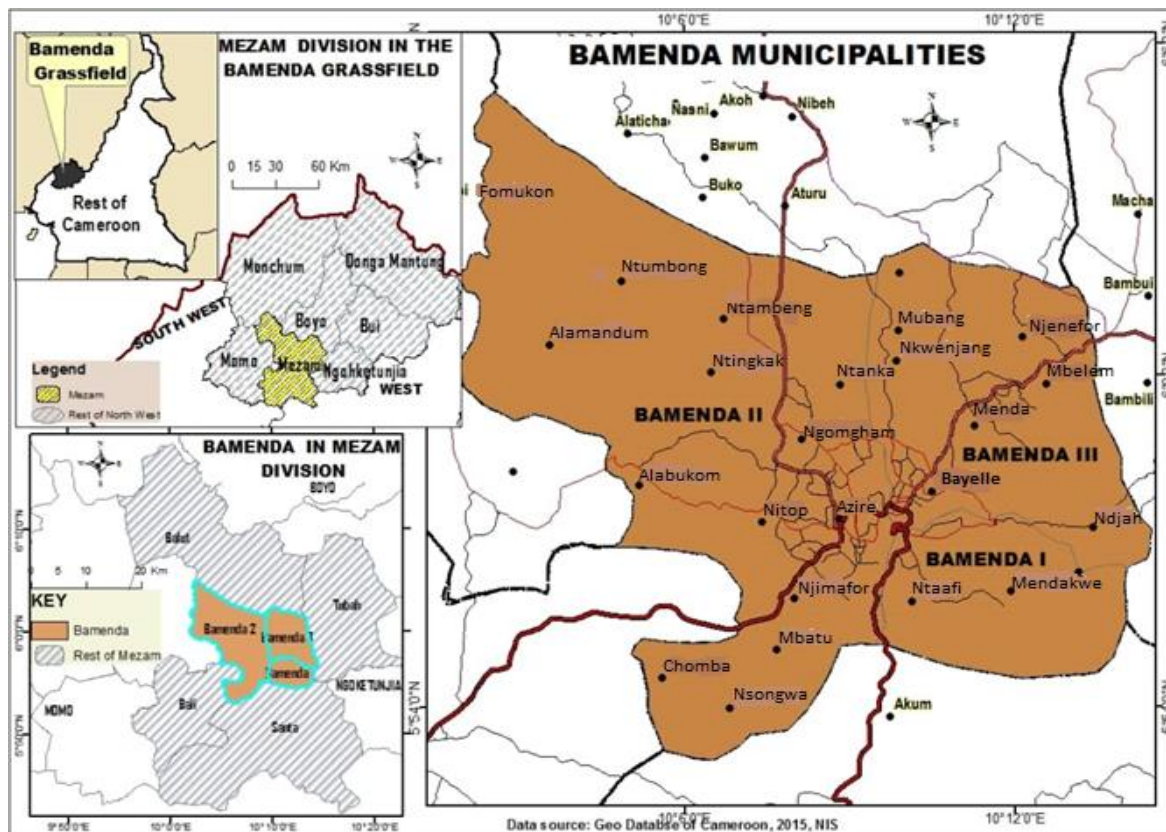
Map 1. Shows the location of Bamenda Urban Space within Maze Division in the North West Region of Cameroon.
Source: Adapted from [12]

Bamenda with an average temperature of 24⁰C and an annual average precipitation from 1,700 to 2,824mm has two distinct seasons, namely, the rainy and the dry season. The relief of Bamenda town is undulating with hills and valleys. The area is dominated by lateritic soils which are reddish in colour with alluvial soils found along river courses which attracts especially the urban poor to this area. Human activities in Bamenda Urban Space include primary, secondary and tertiary activities. The informal sector employs majority of the urban dwellers such as petty traders, taxi drivers, bike riders, tailors, hair dressers, carpenters shoe menders amongst others. The rate of informal employment in the North West Region with Bamenda inclusive was estimated at 94.0% in 2010 with an underemployment rate of 78.3% of the labour force [13]. These activities have attracted migrants but the less educated and unskilled migrants who cannot access formal employment illegally occupy hillslopes and flood plains for housing development as they cannot afford the high rents and land prices in suitable locations.

3.2 Sampling Design

In order for an in-depth study to be conducted a mixed method approach was adopted. This involved triangulation of quantitative and qualitative methods of data collection concurrently. Triangulation focused on the collection and analyses of qualitative and quantitative data [14]. Two different types of mixed methods were employed in this study. The concurrent transformative mixed method and the concurrent triangulation method. The critical indicators were probed through a structured questionnaire administered to the households and through interview guides administered to Mayors, government delegates, chief of services and community leaders.

3.3 Data Collection

Data from both primary and secondary sources were used. Primary source data were obtained from the use of an interview guide and a semi-structured questionnaire (Appendix A). Data from secondary sources were collected from relevant official documents and published articles were consulted.

3.3.1 Primary Sources

Primary data were obtained from field observations, interviews and questionnaires administered to households. The study made use of stratified random sampling technique. Bamenda was stratified into three strata following the three Sub-Divisional council areas. After getting a list of all the neighbourhoods, the selection of neighbourhoods for the household survey was done by assigning numbers to all the neighbourhoods and later dropping them in a box. From this, the neighbourhoods were drawn at random. The sample size of the study was selected from the number of households in the different neighbourhoods obtained from the results of the 2005 population and housing census. This was estimated using sample calculated for one proportion with the support of Epi Info 6.04d [15].

$$n = \frac{NZ^2 P(1-P)}{d^2(N-1) + Z^2 P(1-P)}$$

Where

N= Total targeted population, here considered to be 26,009 households.
Z= Z value corresponding to the 95% confidence level.
Zα/2 = Level of significance = 1.96.
P= prevalence; the prospected prevalence used is 50% assuming optimal sample size.
d= Absolute precision set at 5%.
n effective=n*Design Effect.

The Design Effect used is 1.1, which is greater than 1 because the convenience sampling is used. The bias related to sampling technique is null (assuming a DEFF of 1) only when simple random sampling or systematic sampling are used as explained by [15]. The sample size estimated is 423 households with a minimum expected return of 372. Based on this, 4 neighbourhoods were selected from Bamenda I which make up 15.9% (68) of the town's population, followed by 8 neighbourhoods in Bamenda II which makes up 53.5% (226) of the city's population and lastly 6 Neighbourhoods in Bamenda III which makes up 30.5% (129) of the town's population. Table 1 presents the distribution of respondents in the study area.

The target population for the survey were residents of Bamenda Urban Space residing in a dwelling, be it an independent house, an apartment or a shanty. It considered households who have lived in Bamenda for more than 10 years since they can better appraise the changes in housing quantity, quality, neighbourhood characteristics and changes in population over time. From interviews, variables were identified

and incorporated in the questionnaire to be administered to households. To ensure validity and reliability, a pre-test of the questionnaire was conducted involving 20 households selected at random in the study area. Based on the nature of their responses; the questions were adjusted and modified in order to obtain proper information from the respondents.

3.4 Secondary Sources

Data from secondary sources were obtained from Journal articles, books and unpublished sources. Satellite imageries for two time periods; 1986 and 2019 were downloaded, ArcGIS was used to generate a map describing changes in urban built-up in the study area.

3.5 Ethical Considerations

Ethical measures were observed throughout the investigation since a face-to-face interactive data collection was conducted. A consent letter approved from the administration of the University of Buea, department of Geography and from the supervisor to conduct the study was obtained. The letter was presented to all the participants and the purpose of the study was explained to them. Only those who gave their consent were interviewed and administered questionnaires. The participants were informed that the data were strictly for academic purposes. Only general characteristics like age, sex, gender, educational level and settling type where asked, no other personal identifiable information was divulged, codes were given (e.g., principal 1 or principal 2) during data processing.

3.6 Data Analysis

The data generated from the questionnaires were subjected to statistical analysis to produce descriptive and inferential statistics. Responses from the open-ended items were analysed qualitatively using the thematic approach. Data was entered using EpiData Version 3.1 and analysed using the Statistical Package for Social Sciences (SPSS) Standard version, Release 21.0. Data clean-up (content clean-up and exploratory statistics), was done through Exploratory statistics. Frequency distributions presented in the form of tables and figures were used to describe the housing situation of respondents.

Table 1. Distribution of questionnaires to respondents in the Bamenda Urban Space

Municipality	Neighbourhood	Population	Number of Households	Sample size	Effective Respondents
Bamenda I	Abangoh Ntangang	3189	638	19	17
	Ayaba	4608	922	28	24
	Aningdoh	1229	256	8	7
	GRA (Alahting)	2169	434	13	12
Total for Bamenda I		**11,195**	**2250**	**68**	60
	Ntamulung	15847	3169	55	48
Bamenda II	Atu-Azire	13415	2683	46	41
	Old Town	7897	1597	27	24
	Mulang	6848	1370	24	20
	Upper Ngomgham	2040	408	7	6
	Ntarikon	14245	2849	49	44
	Ntaturu	4507	901	16	14
	Mbingfibi	860	160	3	2
Total for Bamenda II		**65,659**	**13,137**	**226**	199
	Bayelle I	12879	2576	31	27
Bamenda III	Bayelle III	14426	2885	35	31
	Sisia II	8563	1713	21	18
	Mugheb	8138	1628	20	17
	Futru	1207	241	3	3
	Foncha Street	7897	1579	19	17
Total for Bamenda III		**53,110**	**10622**	**129**	**113**
Total		**129,964**	**26009**	**423**	**372**

4. RESULTS AND DISCUSSION

4.1 Housing Situations in Bamenda Urban Space

This section examined the current housing situation looking at the structure, living spaces, accessibility to services and facilities (water, energy, kitchen, toilet, roads and waste disposal) and occupancy status.

4.1.1 Structural characteristics of housing

It was observed that the structure of housing in Bamenda Urban Space are not uniform, as houses are constructed site by site using diverse building materials. Field investigation revealed that 43.8% (163) of houses are constructed with mud blocks and cement, 34.1% (127) use mud blocks and rudimentary materials, 20.2% (75) use cement blocks and 1.9% (7) use stones and cement. Households in Bamenda Urban Space use metals of different sort as roofing materials. Field investigation revealed that 56.7% (211) of the houses use metal of good quality, 42.5% (158) use metal of poor quality which are very

old, rusted and are most often leaking while just 0.8% use tiles as roofing materials. Although the structure of housing has been improved with new designs and technology, yet there is low level of maintenance in the inner-city and the use of rudimentary materials in squatter settlements as shown on Plate 1.

Field investigation revealed that 66.9% (249) of households use metal protectors on their windows while 33.1% (123) of the population did not have metal protectors. The lack of window protectors in some households reveals that there is a high probability of these households to be exposed to extreme climatic conditions (e.g., rainfall, temperature, sunshine and wind) and theft. Analysis of housing accommodation revealed that 68.5% of households live in 2 or more rooms in a compound which is most often inadequate as they have very large families with inadequate housing amenities, followed by 19.6% who live in self-contained 3 or more-bedroom flats, 7.3% for single room in a compound and 4.6% for self-contain one or two bedrooms flats (Table 2).

A

B

Plate 1A. House built with mud block and rudimentary materials in Sisia Quarter 1B: a): Shows Roofing Metal of good quality b): Shows Roofing Metal of Very bad quality in Bayelle III
Source: Fieldwork, 2019

Table 2. Types of housing accommodation

Types of house Accommodation	Frequency	Percentage (%)
Single room in a Compound	27	7.3
2 or More rooms in a Compound	255	68.5
Self-contained 1/2 Bedroom Flats	16	4.3
Self-Contained 3 or More-bedroom flats	73	19.6
Others; specify	1	.3
Total	**372**	**100.0**

Source: Field Work, 2019

With regards to the age of the houses, 16.7% (62) of houses were constructed before the 1960s while 39.8% (148) of houses were constructed between 1960 and 1980. Therefore, 56.5% of houses in the study area are more than 40 years of age. This indicate that most of these houses have attain a state of dilapidation and depreciations as shown on Plate 2A. This finding is in line with the study of [16] who posited that new buildings tend to be more habitable than old buildings. The period between 1980 and 2000 marked the beginning of the economic crisis in Cameroon which resulted to a drop in the number of houses constructed to 18.3% (68). The crisis had negative effects on the different aspects of development, more especially on housing development. From 2000 to present, housing construction increased to 25.3% (94). Analysis on housing condition reveals that 51.9% (193) of houses are in need of minor repairs, 28.8% (107) for major repairs, while just 14.5% (54) of houses were in sound condition and 4.8% (18) were dilapidated houses as shown on Plate 2B. It was observed that, majority of the houses in the old inner-city slum neighbourhoods like Ntamulung, Atua-Azire and Old Town were in very bad condition with broken window louvers, holes on the roofs, cracks on the floors and wall paint peeling off as show on Plate 2A.

4.1.2 Living space

In order to measure overcrowding, household size and room density were analysed. Field investigation revealed that a majority (58.3%) of respondents have household sizes between 7-10 persons which is far above the average household size in Cameroon (5 persons per households) as shown on Table 2. Further investigation revealed that 66.1% of respondents had room density of 4-6, 26.9% had room density of 1-3 persons while 7.0% had room density of 7-10 as seen on Table 3. It is evident from these results that there is a high degree of overcrowding. This finding is in contravention of the regulations stipulated by the [17] which opines that houses are said to have sufficient living space when a room is shared with at most 3 persons.

Plate 2A. Single room housing in need of major repairs in Old Town B: Dilapidated housing quality in old town
Source: Field work, 2019

Table 3. Household size and room density in Bamenda urban space

Household size	Frequency	Percentage (%)
3	8	2.2
4-6	97	26.1
7-10	217	58.3
10+	50	13.4
Total	372	100.0
Number Per Room	**Frequency**	**Percentage (%)**
1-3	100	26.9
4-6	246	66.1
7-10	26	7.0
Total	372	100.0

Source: Field work (2019)

4.1.3 Water supply accessibility

Water is a life sustaining resource but its supply is limited. There are many sources of water in Bamenda Urban Space which are used for drinking and for other purposes. The water sources are either improved or unimproved sources as shown on Fig. 2.

As can be inferred from Fig. 2, majority (65.3%) of the urban population use piped water connected in their compounds which is shared amongst everyone in the compound. This is followed by 32.3% of respondents who use public tap and 19.9% use their private in-house tap connection. The inaccessibility and unreliability of piped water supply has turn households to other alternative such as wells (33.6%), boreholes (26.3), rainwater harvesting (24.7%) and spring (23.4%) while the affluent household's backup their supply with bottled/sachet (10.2%). Households invest heavily in storage facilities like buckets, pots, jugs and drums especially during the rainy season where water is collected from roofs. However, these containers are most often not enough to store water and have a high probability of pollution since most of the roofs are dirty and rusted thereby, reducing the quality of water when compared to piped water. Also, some of these alternative water sources are not often treated indicating a likelihood of households being affected by water-related diseases, such as diarrhoea, typhoid and malaria.

Furthermore, majority (75.0%) of households revealed that piped water supply was not regular while just few neighbourhoods had constant water supply. Most households in low-class neighbourhood's averred that their water pipes have not been functional for several weeks, months and even years. This correspond to the work of [18] who opined that the shortage of piped water supply in cities in Sub- Saharan Africa has made most households to move from regular to irregular sources of water supply. Further findings revealed that, 75.0% of households without water connection, trek more than 200 m to fetch water while just 25.0% fetch water within 200 m. This indicates that access to water is poor when compared to the United Nation standards that potable water is considered appropriate when it is within 200 m of the users' dwellings [19].

4.1.4 Energy source

With regards to energy source for lighting, 99.2% (369) of the sampled households use electricity as the main source of energy, but the unreliability of its supply makes households to go for days and weeks without electricity supply. As a panacea to this, households have to supplement their energy supply especially in times of electricity failure. Field Investigation revealed that 68.0% (253) of respondents use Kerosene lamp, while 21.5% (80) of the well-off households use generators and 10.5% (39) use solar energy as auxiliary.
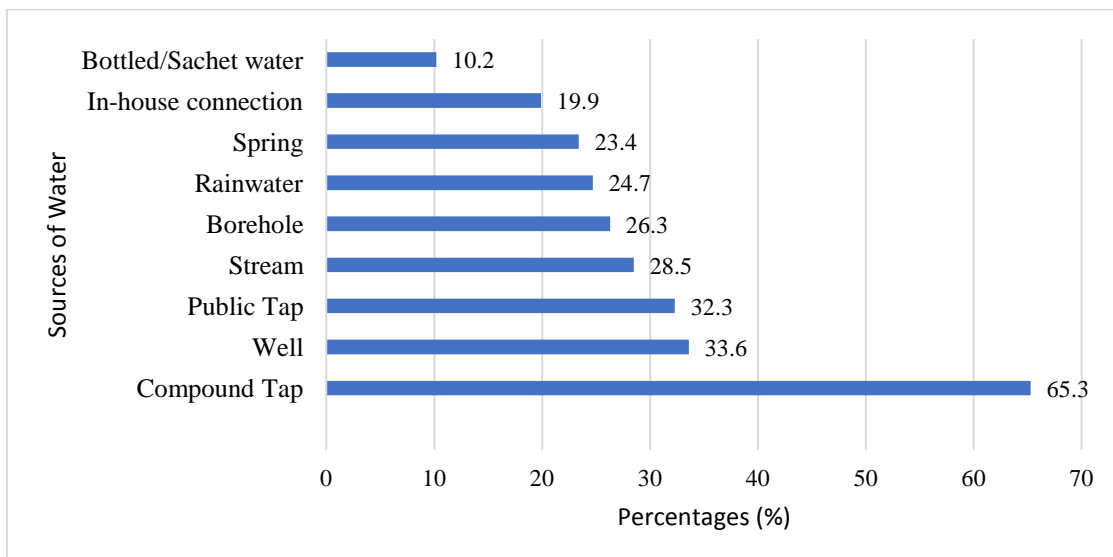
Fig. 2. Distribution of water sources used in Bamenda urban space
Source: Field Work (2019)

4.1.5 Kitchen facility

Field investigation revealed that 54.0% (209) of respondents share external kitchen facilities while 28.2% (109) have their exclusive external kitchen facility and 17.8% (69) have exclusive internal kitchen facility. Some households admit to having both internal and external kitchen facility in the compound. It was observed that most households sharing kitchen facility live in crowded neighbourhoods where problems of smoke, heat and odour are common phenomenon.

4.1.6 Toilet facilities

The results presented on Table 4 revealed that external toilet system is the dominant (78.6%) system use while only 21.4% use internal toilet system. With regards to the different types of toilet facilities, 49% use ventilated pit toilet system followed by 30% who use open pit system and 21% use flushing toilet system. Most households with internal flushing toilets still end up using pit toilet system due to water scarcity.

Findings also revealed that 69.9% (260) of households share toilet facilities, from this, 63.8% share toilets with 3-4 households, 23.8% share between 1-2 households and 12.4% share toilets with 5 households and above. The pit toilets are often makeshift with floors made of gravel, stones or wood; rusted roofing metals, use of fertilizer bags or cloths as wall materials. This makes the environment look nasty and pollute the air. This has resulted to lack of privacy, poor ventilation and pose a threat to well-being. This is in contravenes the UN-Habitat regulations which states that "excreta disposal system is considered adequate if it is private or shared by a maximum of two households [20,21]. Also, it contravenes the sanitation regulation of the April 1994 Town Planning Law of Chapter IV, Article 36 (1) which stipulates that a distinct toilet equipment and sanitation, inside or outside the house, must be installed in any dwelling of more than one main room.

4.1.7 Waste disposal

The most common waste in Bamenda Urban Space include fuel residues, wrapping papers, leaves, empty cans, bottles, mineral water bags and bottles, cartons, cellophane materials, plastics and wooden containers amongst others. Field investigation revealed that household's use multiple methods of waste disposals due to the inadequate waste evacuation facilities. Waste is only collected along the main roads, and those that reside far within the settlements have turn the urban streamlet as dumpsites. Findings revealed that 24.9% of households dump their refuse in streams, 21.2% in pits and farms, 16.1% use waste collection (HYSACAM) cans, 14.4% burn their waste, 9.3% recycled waste, 7.8% use storm drains and 6.3% at road sites as shown on Plate 3. These poor practices have led to the contamination of the environment, especially pollution of the air, land and streams. This is in violation of section 50, (2) of the 1996 Cameroon environmental law which stipulates that, "it is strictly forbidden to deposit waste on state property" According to Section 25, waters are classified as state property, Section 28 prohibits all practices, direct or indirect that is likely to degrade the surface and ground water.

Table 4. Types of toilet system, toilet facility and number sharing toilet facility

Types of toilet system	Frequency	Percentage (%)
Internal	87	21.4
External	320	78.6
Total	407	100.0
Types of toilet facility	**Frequency**	**Percentage (%)**
Flushing	87	21
Ventilated pit	200	49
Open pit	120	30
Total	371	100.0
Number of Households who share toilet Facility	**Frequency**	**Percentage (%)**
1-2	62	23.8
3-4	166	63.8
5+	32	12.4
Total	260	100.0

Source: Field work, 2019

Plate 3. Waste disposal in storm drains and on road sites in old town
Source: Field Work, 2019

4.1.8 Road accessibility

The efficient functioning of any economy largely depends on the efficiency and adequacy of its transport system which is related to housing. The study measures accessibility as the possibility of a vehicle to get directly into the vicinity of a household or the difficulties with which household members get to the main roads. Field investigations revealed that 59% (219) of households were accessible by foot, 23% (87) by car while 18% (66) were accessible by winding in between houses. Person's in some neighbourhoods have to move through very narrow footpath of less than 1 meter to get to the main road. This contravenes chapter I, section 11, article 1 of the town planning law of 1994 of Cameroon, which states that "the land shall be approved for building purpose only when it is served by a public or private road at least (7) seven metres wide". Article 2 continues that for any parcel of land to be built on, it must be accessible to sanitation, fire-fighting units and to other services.

4.1.9 Occupancy status

Occupancy status determines the degree of tenure security of the household. As such a secured tenure is one of the most important aspects of housing. House owners are more secured than renters and dependents. Field investigation revealed that 61.6% (229) of the inhabitants enjoy the owner-occupied status while 36.6% (136) live in rented accommodation and 1.9% (7) of houses are occupied by dependents (care takers or family members). Out of the 61.6% of house owners, 22.0% owned land titles as against 78.0%. Further investigation revealed that 42.6% owned building permits as

against 57.4%. Despite the fact that a large proportion of inhabitant's own houses, more than 50.0% of these houses do not have tenure security due to the fact that they do not own dejure property right. This implies that they cannot get a mortgage for their property. It is evident that most of the houses constructed do not comply with the town planning regulations.

4.2 Challenges to Housing Development in Bamenda Urban Space

The high rate of urbanization and urban growth, increasing poverty, high cost of land, non-compliance to planning policies, high cost of building materials and corruption are some of the daunting challenges faced by urban residents in achieving adequate housing in Bamenda. However, this paper focuses on urbanisation and urban growth as the major challenge to housing development in Bamenda Urban Space.

4.2.1 Urbanisation and urban growth

The urbanisation process of Bamenda is occurring without a concurrent increase in adequate housing supply. Based on data from the census sheet, the population of Bamenda increased from 48,111 in 1976 to 146,021 in 1987, 322,889 in 2005 and to 907,766 in 2016 [12,13]. From 1976 to 1987 the population of Bamenda tripled with the average annual growth rate of 7.8% and more than doubled from 1987 to 2005 with an average annual growth rate of 4.9. Though there was a drop in the average annual growth rate, it is interesting to note that, the annual growth rate of 4.9 in Bamenda is greater than the national growth rate of 2.8% [22]. Further analysis of these results shows that Bamenda moved from the 7th position of
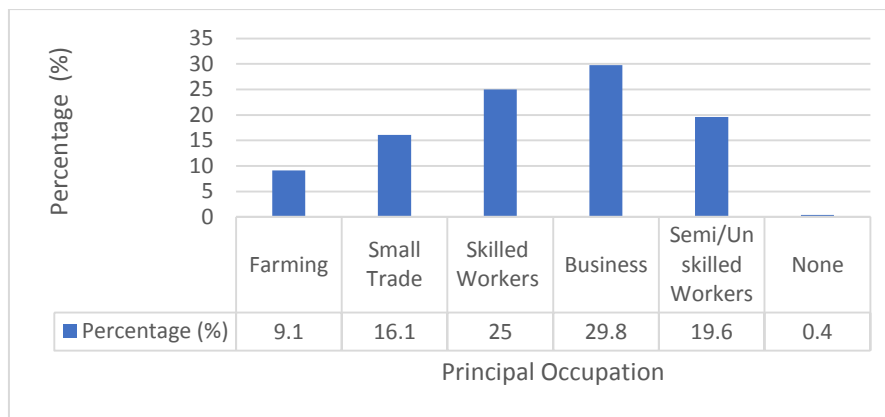
hierarchy of towns in Cameroon in 1976 to occupy the 3rd position after Douala and Yaoundé by 2005 (Bamenda Master Plan, 2012).

The rapid urban growth in Bamenda is the result of two population growth factors: natural increase in population and net-migration. This is in line with the finding of [23], who averred that about 60% of population growth in developing countries is a result of natural increase. The high birth rate in Bamenda Urban Space can be attributed to high fertility seen through the early marriages common amongst teenagers (17-18 years), and the low sensitization on family planning and the use of contraceptives. The culture and tradition of giving birth to many children as a source of wealth and support in the future and the reduction in infant mortality due to improvement in medical facilities explain this increase in population. The sex ratio of Bamenda Urban Space reflects that of the entire nation which stands at 48% for male and 52% for female. Bamenda presents a progressive age structure characterised by more (56.4%) youths of less than 20 years [13]. The high percentage of female over males and the high percentage of youths indicate a continuous growth in the population. The rate of urbanization was estimated at 50.2% with a population density of about 300 persons per square kilometre [12] which shows serious overcrowding.

Being the Head Quarter of the North West region, Bamenda attracts migrants from rural areas and other satellite towns. According to census results, the proportion of Cameroonian migrants living in towns increased from 36 percent in 1976 to 41 percent in 1987, and to 51 percent in 2005 [13]. This indicates that migration remains a key factor to urban population growth. The high rate of rural-urban migration into Bamenda Urban Space is because of the plethora of services it offers which are absent or in short supply in the area of origin. The continuous displacement of people from rural to urban areas coupled with increase in nuclear families is occurring without a concomitant increase in formal sector employment as shown on Fig. 3.

Fig. 3 indicate that only 25.0% of the population are skilled workers employed in the formal sector while the majority are engaged in the informal sector doing business, engaged in semi/unskilled (e.g., Hair dressers, technicians and tailors) activities, small trade and farming. Informal sector employs majority of the urban population but the income levels of these households are very low as show on Table 5.

Percentage (%)	Farming	Small Trade	Skilled Workers	Business	Semi/Un skilled Workers	None
Percentage (%)	9.1	16.1	25	29.8	19.6	0.4

Principal Occupation

Fig. 3. Bar graph showing principal occupation of respondents

Table 5. Distribution of monthly income range

| Monthly income range (FCFA)	Frequency	Percentage (%)
Less than 50,000	30	8.0
50,000 to below 100,000	151	40.6
100,000 to below 150,000	115	30.9
150,000 to 200,000	49	13.2
200,000+	27	7.3
Total	372	100.0

Source: Field Work, 2019

It is evident from Table 5 that Majority (48.6%) of respondents earn below 100,000 FCFA. This is followed by 30.9% of respondents who earn between 100,000 and 150,000 FCFA while just 7.3% earn above 200,000 FCFA. This indicate that the urban growth process in Bamenda is a poverty-driven process accompanied by low income, underemployment and increasing intensity of urban poverty. Most of the urban poor move to slums and squatter settlements were housing and land prices are low and where they can construct using cheap rudimentary materials like the situation in Ntamulung, Old town, Sisia and Abangoh.

The housing problems in Bamenda Urban Space is not just one of inadequate quantity to meet the ever-increasing demand, but is also the poor-quality housing stock in the inner-city slums and the squatter settlements. Satellite imageries were used to examine the degree of urban expansion and housing development in Bamenda Urban Space, a land use map was produced showing the rate of expansion of built-up areas at the

expense of other land uses. The growth in urban built-up is attributed to the rapid urbanisation, urban growth and increase demand for housing as shown on Map 2.

Map 2 shows the rapid growth in Built-up areas between 1986 and 2019 in Bamenda Urban Space. With a total surface area of $141.78 Km^2$, built-up land occupied $15.47 Km^2$ (10.9%) in 1986 and almost tripled to $43.07 Km^2$ (30.4%) in 2019 with a Magnitude of change of $27.6 Km^2$ and a yearly change of $0.83 Km^2$. This rapid increase in built-up has threatened environmental sustainability as evident by the spatial expansion of housing into other land uses and marginal lands like flood plains and steep slopes. This finding corresponds to the work of [24], who carried out a study on the implications of land use dynamics, which revealed that settlement land use doubled from $19.8 Km^2$ in 1983 to $43.03 Km^2$ in 2013, indicating a magnitude of change of $23.23 Km^2$ increase in settlement land use at the expense of forest cover, grazing and farm lands. It is evident that as the urban
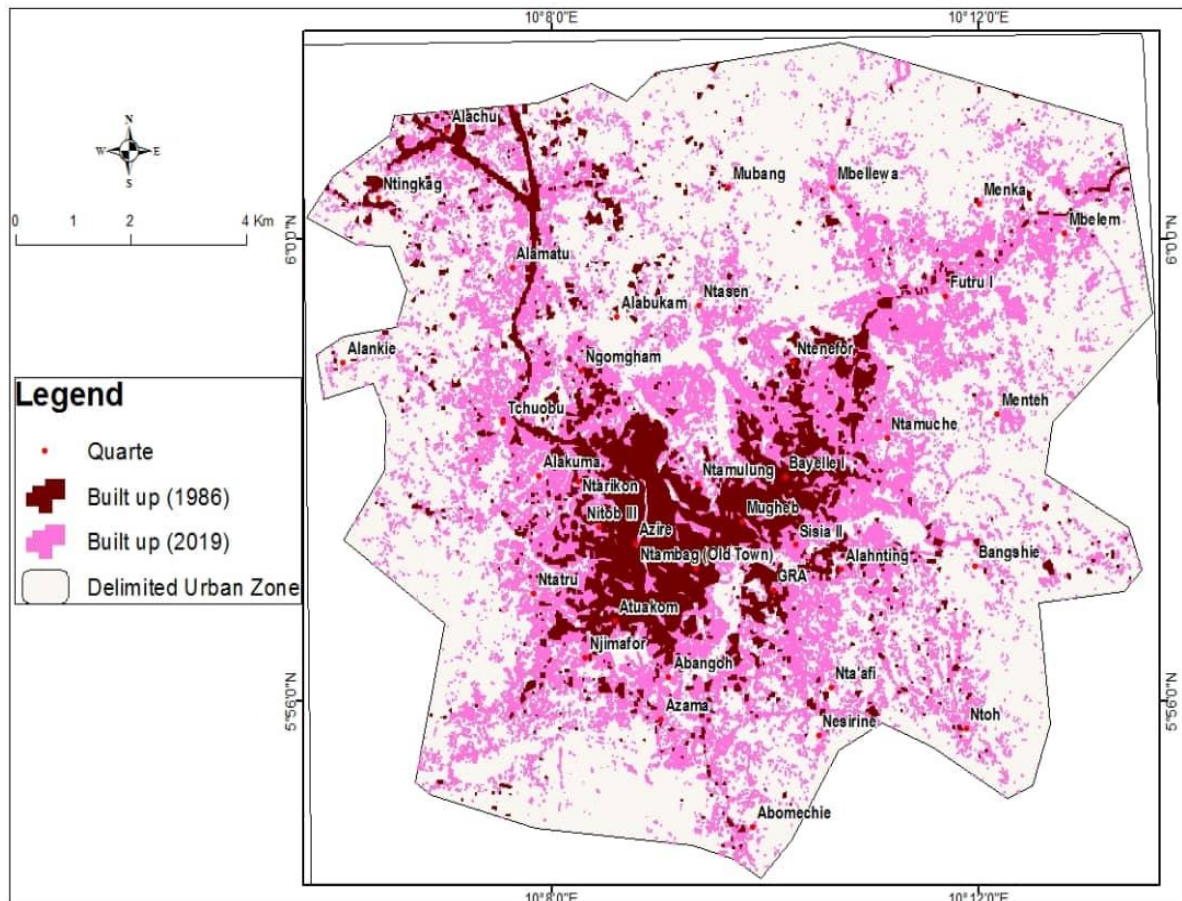
Map 2. Changes in built-up land use in Bamenda urban space from 1986 -2019
Source: Bamenda City Council/ Landsat ETM Image for 2019, Google Earth Images and Field work, 2019
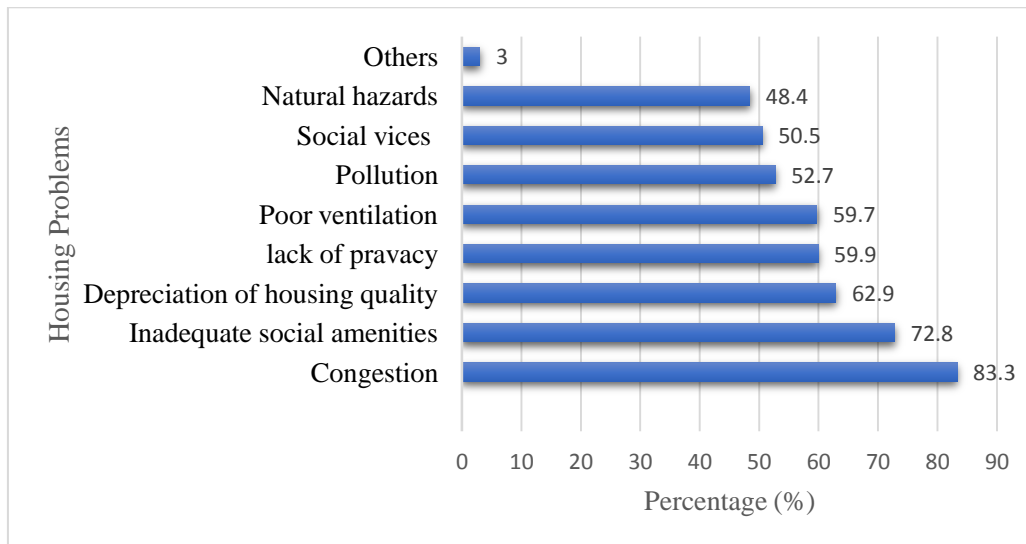
Fig. 4. Bar graph showing housing problems in Bamenda Urban Space
Source: Field Work (2019)

population increases so too is the demand for housing. Also, [25] added that in most developing countries, the demands for housing and other social amenities are not met, thereby, affecting housing development negatively. Fig. 4 presents findings on the implications of urbanisation and urban growth on housing in Bamenda Urban Space.

Congestion is seen as the most severe problem of urban growth, as houses are constructed very close to one another without respecting the space setbacks. The increase in population has placed pressure on social amenities resulting to water shortage, limited access to electricity, poor toilet systems, poor road accessibility. Also, there is lack of privacy, poor ventilation, social vices like robbery, pick pocketing and prostitution, the proliferation of house pest. Furthermore, the urban poor who cannot afford land in planned locations move to flood plains where they occupy river banks, stream/river courses, culvert and drains. This reduces infiltration, increase runoff and shorten lag time resulting to floods during heavy rainfall like the case of Mulang, Ngomgham and Atua-Azire. Also, some inhabitants undercut steep slopes with gradients above 35^0 for housing development, such slopes are susceptible to landslide and rockfall. This slope stretches from the Bamenda escarpment down to Sisia, Mugheb, Ayaba, Old town and Abangoh. The occupation of such hazardous locations has increased the magnitude and intensity of floods and landslides in Bamenda resulting to loss of life's, properties, pollution and other health related problems. This finding

confirms to the study of [26] which posited that "the visible and most obvious consequences of urban growth in developing countries, is the rapid deterioration of urban housing and living conditions."

5. CONCLUSION

This paper has discussed the current housing situation in the Bamenda Urban Space, even though the housing designs and technology has been improved, a large proportion of houses especially those of the inner-city slums and the squatter settlement are deteriorating with little or no sustentation. Most of the social amenities like piped water, electricity supply are not reliable making households to resort to other alternative sources with poor quality. The poor waste collection systems in most of the slum neighbourhoods are due to poor accessibility. These problems are driven by the rapid urbanisation and urban growth process which is a poverty-driven process accompanied with low income and underemployment. Since urbanisation is not accompanied by a corresponding increase in housing supply, the urban poor who cannot afford the high cost of housing settle in slums and on marginal lands leading to increase in social vices and intensity of natural disasters.

6. RECOMMENDATIONS

The Bamenda City Council should upgrade some old degrading neighbourhoods such Old Town, Atua-Azire, Ntarikon, Ntamulung, Sisia and

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Mugheb. This can be done through the reformation of houses in poor state, the provision of basic housing services in areas of dearth and upgrading existing infrastructures and services in other areas.

The government should develop, encourage and subsidize mortgage institutions, banks, micro finance and even community-based institutions to grant loans at low interest rate to individuals and institutions involve in real estate development. Also, prices of building materials should be regulated by the government so as to permit even those with low-come to construct adequate and affordable housing.

The ministries in charge of housing and urban development (MINDHU) should also do proper follow-ups to regulate all housing projects within Bamenda Urban Space. This is to avoid the current irregular pattern of housing development in most neighbourhoods especially Sisa, Old Town, Ntamulung, Atua-Azire and Ayaba which are characterise by low income households. This can be done by reviewing the Master plan so as to carter for the current and future growth of Bamenda. Efforts should be geared towards improving the quality of old houses and making sure new building follow the planning regulations.

The sanitary inspectors from the Councils should reawaken the nonchalant attitudes of the residents towards sanitation laws and regulations. This can be done by sensitizing the low-income households who live in overcrowded slum neighbourhoods and squatters on the importance of having and keeping clean toilets and proper waste management. There should be constant inspections so that the residents can always keep their surroundings clean.

There is the need for constant monitoring and review of housing policies and programmes. These policies should be geared towards progressively increasing the supply of quality housing units to reduce the perennial housing problems. The construction of low-cost estates for the low-income class should be very realistic with proper follow-ups so that those who actually live in these houses should be the low-income earners.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Appendix A

QUESTIONNAIRE

This research entitled "**Housing situation in the Bamenda Urban Space, challenges and the way forward" is** intended to be in partial fulfilment for the award of a degree of Doctor of Philosophy (Ph.D.) in Geography. Kindly answer the following questions by placing a tick ☐ in the appropriate boxes and fill the blank spaces where necessary. This is purely an academic exercise. The confidentiality of your response is guaranteed.

A) Respondent Identification

1. Sex: a) Male ☐ b) Female ☐
2. Age bracket: a) 15-34 ☐ b) 35-54 ☐ c) Above 55 ☐
3. Marital status a) Single ☐ b) Married ☐ c) Divorced ☐ d) Window(er) ☐
4. Region of origin? _____
5. Which quarter do you reside in _____?
6. Level of schooling: a) Basic ☐ b) Secondary ☐ c) High School ☐ d) Post-secondary ☐
    e) University ☐ f) None ☐ g) Others (Specify) _____
7. What is your principal occupation _____?
8. What is your monthly income range from all sources: a) less than 30,000 ☐ b) 50.000 to below 100.000 ☐ c) 100.000 to below 150.000 ☐ d) 150.000 to 200.000 ☐ e) 200.000+ ☐
9. For how long have you lived in this neighbourhood _____
10. What is your present occupancy Status?
    a) Owner ☐   b) Tenant ☐ c) Dependent ☐
11. what attracted you to this neighbourhood? a) Low cost ☐ b) Location ☐ c) Proximity to Job site ☐ d) Quality of house ☐ e) Calm ☐ f) Security ☐ g) Cleanliness ☐
    h) Accessibility to services (water, roads, waste management etc.) ☐

B) Housing Situation in Bamenda Urban Space

12. What type of housing accommodation do you occupy?
    a) Single room in a Compoun ☐ b) 2 or more rooms in a Compound ☐ c) self-contained one Bedroom flat ☐ d) Self-contained 2 Bed room Flat ☐ e) Self-contained 3 or more Bedroom flat ☐ f) Others, Specify _____
13. Number of persons sharing a single room in your house? a) 1-3 ☐ b) 4-6 ☐ c)7-10☐
14. Number of persons living in your house? a) 1-3 ☐   b) 4-6 ☐ c) 7-10 ☐ d) 10 + ☐
15. Period when your house constructed? a) Before 1960 ☐ b) 1960-1980 ☐ c) 1980-2000 ☐ d) 2000- till present ☐ e) I do not know ☐
16. Identify the state of the housing condition you occupy? a) Sound ☐ b) Needs minor repairs ☐ c) Needs major repairs ☐ d) Dilapidated ☐
17. Which material did you use for the construction of your walls? a) Cement Blocks b) Mud Blocks ☐ d) stones and cement ☐ e) Mud Blocks and Rudimentary Materials ☐ e) Others, Specify_____
18. Which material did you use for roofing? a) Metal of good Condition) ☐ b) Metal of poor Condition c) Others, Specify_____
19. Which material did you use for your floor? a) Cement of good condition ☐ b) Cement of Poor Condition ☐ c) Tiles ☐ d) Bare ground ☐ e) Others, Specify_____
20. Which material did you use on the windows? a) Glass ☐ b) Wood ☐ c) Plastic Paper ☐ d) Others, Specify_____
21. Do the windows have Metal protectors? a) Yes ☐ b) No ☐
22. How do you get water in your house? a) In house connection ☐ b) Compound tap ☐
    c) Public Tap ☐ d) Well ☐ e) Borehole ☐ f) Spring ☐ g) Stream ☐ h) Rain water ☐
    i) Bottle/sachet water☐
    i) How regular is the water supply? a) Very Regular ☐ b) Regular ☐ c) Not Regular ☐
    d) Not flowing ☐ e) others, Specify _____
23. If you do not have pipe borne water connection, how far is the source of water from your house? a) less than 200m ☐ b) Above 200m ☐

24. What type of Kitchen facility do you have? a) Exclusive (in house) ☐ b) Exclusive (in compound) ☐ c) shared (in compound) ☐ d) Others, specify_____
25. **i)** What type of toilet system do you have?   a) Internal ☐   b) External ☐
    ii) What type of toilet facility do you have? a) Flushing Toilet ☐ b) Ventilated Pit latrine ☐
       c) Open pit latrine ☐   d) Others (Specify)_____
    iii) Do you share your toilet facility with another household? a) Yes ☐   b) No ☐
    iv) If yes, specify the number of households sharing the toilet facility? _____
26. **i**) What form(s) of energy do you use in the house for lighting? a) Electricity ☐
       b) Kerosene Lamp ☐ c) Generator ☐ d) Solar ☐ c) Others (Specify)_____
    ii) How regular is the electricity supply? a) Very Regular ☐ b) Regular ☐ c) Not Regular☐
27. How do you dispose household waste? a) Streams ☐ b) Pit ☐   c) Reused/recycled ☐ d) HYSACAM Can ☐   e) Burning ☐ f) Buried ☐ g) Road side ☐   h) Others (specify)_____
28. How often are your wastes collected? a) often ☐ b) Not very often ☐ c) Not Collected ☐
29. In your own opinion, what is the major challenge of housing development in your neighbourhood? urbanization and urban growth ☐ b) increase land prices☐ c) poor implementation of planning policies ☐ d) low income☐   e) lack of housing finance☐   f) Poverty g) physical constraints ☐
30. Is your house having the following documents?

S/N	Housing Documents	Yes	No
1	Land Title Certificate		
3	Building Permit		

31. What are some of the housing problems you face in your neighbourhood as a result of rapid urbanization? a) Congestion ☐ b) shortage of social amenities ☐ c) poor housing quality ☐ d) Lack of ventilation ☐ e) Natural disasters ☐ f) Lack of privacy☐ g) Social vices ☐ h) Pollution ☐ others, specify_____
32. In your opinion, what strategies can be implemented by the different stakeholders for sustainable housing development _____?

_____