

The Impact of Spontaneous Housing Construction on Urban Planning in Buea Urban Area, Buea Sub-Division

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Abstract

Globally, about 1.1 billion people currently live in spontaneous settlements, equivalent to 25% of the world's urban dwellers (UN Statistics Division, 2022). Such a scenario exists in the Buea Municipality which has experienced a rapid population growth from 2016 (2.5%) to 2024 (3.1%) accompanied by limited housing facilities. The aim of this study was to examine the impact of spontaneous housing construction on urban planning in the Buea urban area. It was an investigatory and exploratory study that employed the mixed research methods. Primary data were obtained through questionnaires, focus group discussions and interviews, which were supplemented with secondary data collected from published related articles, magazines, offline and online libraries. Data were analyzed using the descriptive and inferential statistical techniques with the results presented on figures, pie-charts and histograms. Results revealed that most of the urban dwellers earned differently with a majority earning very low salaries. Furthermore, the population has grown rapidly over the

years (from 2.5% to 3.1%) with limited number of housing facilities and carrying capacities which have forced a greater proportion of the population to settle on unplanned areas. Further results revealed that because of unplanned settlements, there were challenges to provide utility services, emergency services, postal services and e-commerce services. Based on the impact posed by the lack of house numbering on service delivery, a majority (45%) of the population attested that unstandardized numbered spontaneous housing posed significant impacts, 25% said moderate impacts, 20% said minor impacts and 10% claimed that there were no impacts. However, urban dwellers adapted to these multiple challenges by adopting to low-cost renovations, visiting community-based pharmacies, and attending low-cost private and community schools and reliant on community-based group for survival. The study concludes that suitable housing facilities were mandatory as stressed by SDG 11 and recommended a holistic and objective town planning process and the provision of basic services in the Buea urban area.

Keywords: Spontaneous housing, impacts, urban planning, Buea urban area.

1. Introduction

Urbanization has become a defining feature of the present era. From the second half of the 19th Century to present, world population has increased astronomically (1.6 billion people in the 19th century to over 8.2 billion people in 2025). This unprecedented increase is largely felt in developing countries, particularly those in Latin America, Africa and South East Asia (UNPD, 2017). This increase has brought about significant challenges, including increased demands for housing, infrastructure, and services. Among these challenges, one of the most prevalent issues is spontaneous or informal housing construction, commonly observed in rapidly urbanizing cities worldwide. Spontaneous housing, often termed as informal or unplanned housing, refers to settlements that emerge without official planning standards (UN-Habitat, 2020).

Spontaneous settlements contribute to significant urban planning challenges, particularly in cities in developing countries, where limited resources and rapid population growth strain the capacity to provide adequate urban infrastructure and services. Spontaneous housing construction is caused by several factors, including rural-to-urban migration, economic hardship, and inadequate housing policies. As these informal settlements expand, they often encroach on land that is poorly suited for habitation, such as floodplains, hillsides, or areas without access to essential infrastructure. The challenges modeled by spontaneous housing are not limited to developing nations. Cities such as Rio de Janeiro in Brazil, Mumbai in India, have informal settlements, or favelas and slums respectively, have developed due to socio-economic disparities and insufficient affordable housing options (Dovey & King, 2011).

In Africa, the effects of urbanization are particularly prominent. Urban populations in sub-Saharan Africa are expected to triple by 2050, creating immense pressure on housing and infrastructure (UN DESA, 2019). A significant part of this urban growth is unplanned, establishing spontaneous settlements on the periphery of cities or in underdeveloped inner-city areas. For example, in countries like Kenya, Nigeria, and South Africa, rapid urban

growth has led to the expansion of spontaneous settlements that struggle with inadequate infrastructure and lack of basic services (Huchzermeyer, 2011). These regions face the dual challenge of managing both rapid population growth and a rising need for planned and affordable housing.

Many studies have identified the issues arising from spontaneous housing in Africa. Huchzermeyer (2011) noted that spontaneous housing construction in African cities results to environmental degradation, poor sanitation, and health issues due to inadequate water supply and waste management systems. Similarly, Davis (2006) advanced that unplanned settlements contribute to urban sprawl, causing cities to implement efficient land use strategies. These issues were influenced by limited governmental ability to enforce land use and building regulations, leading to challenges in creating well-structured urban environments.

Cameroon, like many African countries, has experienced significant urbanization in recent decades. The rapid growing population of Cameroon from 1990 (5.5 billion people) to 2023 (7.5 billion people) has led to an increase in its urban population. From the United Nations Department of Economic and Social Affairs (UN DESA) Population Division Report (2019), approximately 56% of Cameroon's population now lives in urban areas, with cities such as Douala, Yaoundé, and Bamenda experiencing rapid growth. However, the pace of urban planning has not kept up with the growth of spontaneous settlements. In Cameroon, a significant number of urban residents live in spontaneous settlements that lack adequate infrastructure and services, a situation that reflects broader trends seen across Africa (UN-Habitat, 2018).

Buea, located in the Southwest Region of Cameroon, presents a unique case study for examining the impact of spontaneous housing construction on urban planning. As an urban area with a relatively rapid population growth rate (2.5% to 3.1%), Buea has witnessed the expansion of spontaneous housing construction, especially in its peri-urban areas. This growth has been powered by both internal migration and the city's proximity to other economic centers. However, the spontaneous housing construction in Buea has introduced many challenges, particularly for urban planners and municipal authorities who are tasked with managing the city's growth.

The inadequate proper urban planning in Buea has resulted to spontaneous housing construction that infringe on land chosen for other purposes, thereby complicating land use management. These unplanned settlements often lack access to vivacious services such as water supply, waste management, and road infrastructure, leading to health and environmental issues to the population (Acho-Chi, 2002). Furthermore, the nature and characteristics of these spontaneous settlements only means that they were not adequately documented or integrated into the city's official planning frameworks, thereby creating a distinction between the planned urban landscape and areas under development strategy (Acho-Chi, 2002).

However, Buea's unique geographic and socio-economic characteristics also play a key role in modeling its urban landscape. As a city located at the foot of Mount Cameroon, Buea faces geographical checks that limit the availability of land for development, thereby intensifying

the competition for land and contributing to the growth of unplanned settlements (Mukete, 2018).

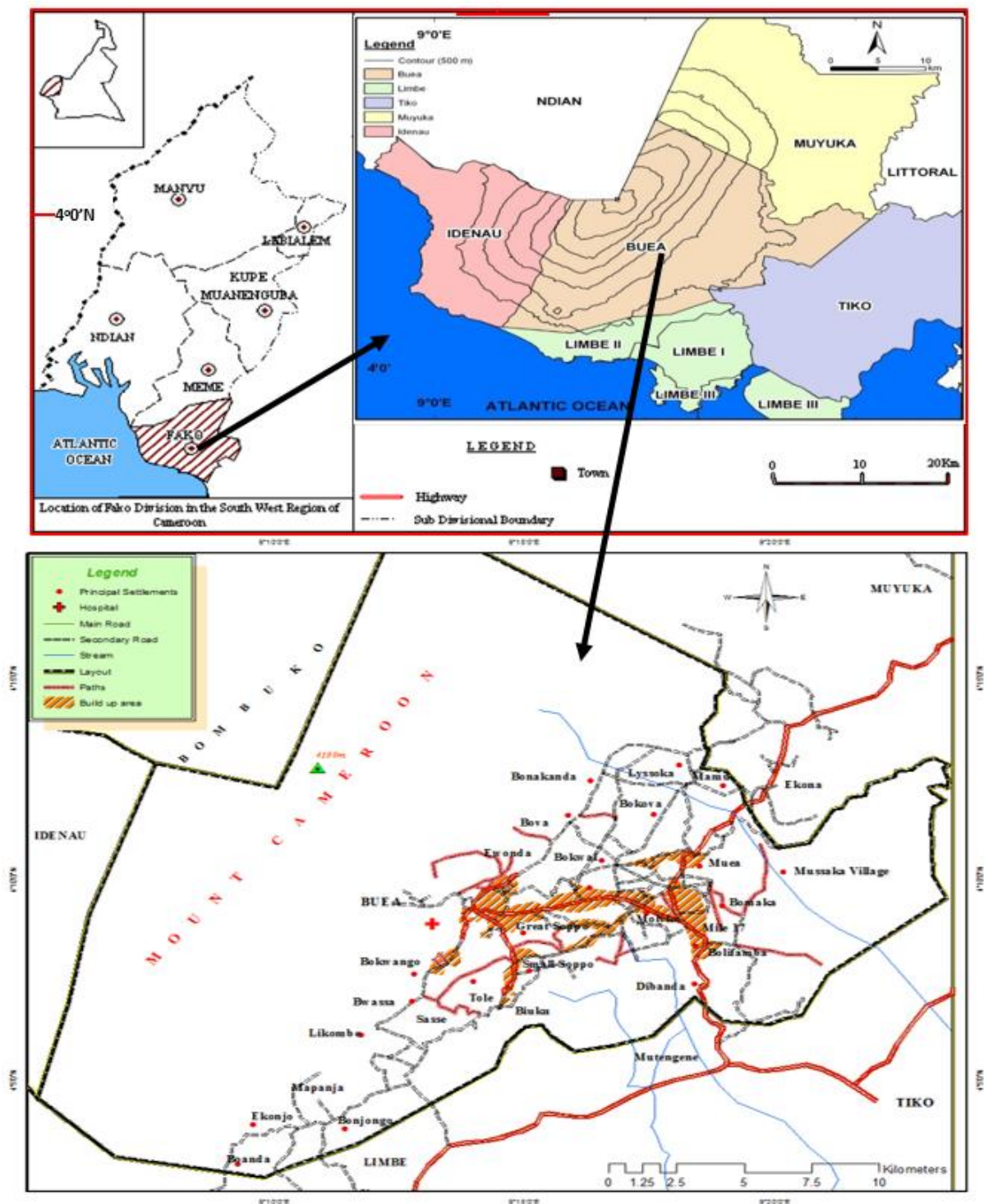
As Buea started expanding as from the early 1900s, there have been dramatic turns in the rate and pattern of construction of houses (Agbornyong, 2019). This spontaneous transformation was the emergence of anarchical construction that does not meet the United Nations standards (the rights to adequate and affordable housing, established in 1948). This is evident by the presence of narrow streets, the juxtaposition of buildings and the development of squatter trading points. In the phase of spontaneous development of houses in neighbourhoods like Babouti Quarter in Buea Town, Great Soppo, Sandpit, Bonduma, Molyko, and Mile 16, interventions from the council authorities like Firefighters, Municipal Police and other forces of law-and-order face significant challenges in the event of crises such as seismic activity, fire disasters, theft, and other urban hooliganisms.

Another significant aspect of these spontaneous settlements is the lack of standardized house numbering, which is crucial for effective urban management. In Buea, the absence of a coherent system for house numbering complicates the work of municipal authorities and service providers. Unnumbered houses make it challenging to conduct accurate censuses, manage land tenure systems, or maintain property records.

The emergence of spontaneous settlements in Buea has led to environmental degradation. The need and spread of unplanned houses in these environments evolved at the detriment of the loss of biodiversity, habitat destruction, and increased greenhouse gas emissions. Furthermore, the inaccessibility of spontaneous areas in Buea disrupt revenue collection and effective waste collection for the council. This article therefore assesses the impact of spontaneous housing construction on urban planning and also examines how the lack of standardized house numbering affects service delivery in Buea urban area.

2. Location

Buea Municipality is found in Fako Division of the South West Region of Cameroon. Buea is located between latitudes 4° 12' - 4° 31' North of the Equator and between longitudes 9° 9' - 9° 12' East (Buea CDP, 2012) of the Greenwich Meridian and it is bounded to the north by Ndian Division, to the north east by Muyuka Sub-Division, to the West by Idenau Sub-Division, to the south east by Tiko Sub-Division and to the south by Limbe I and II sub-divisions (Map 1).

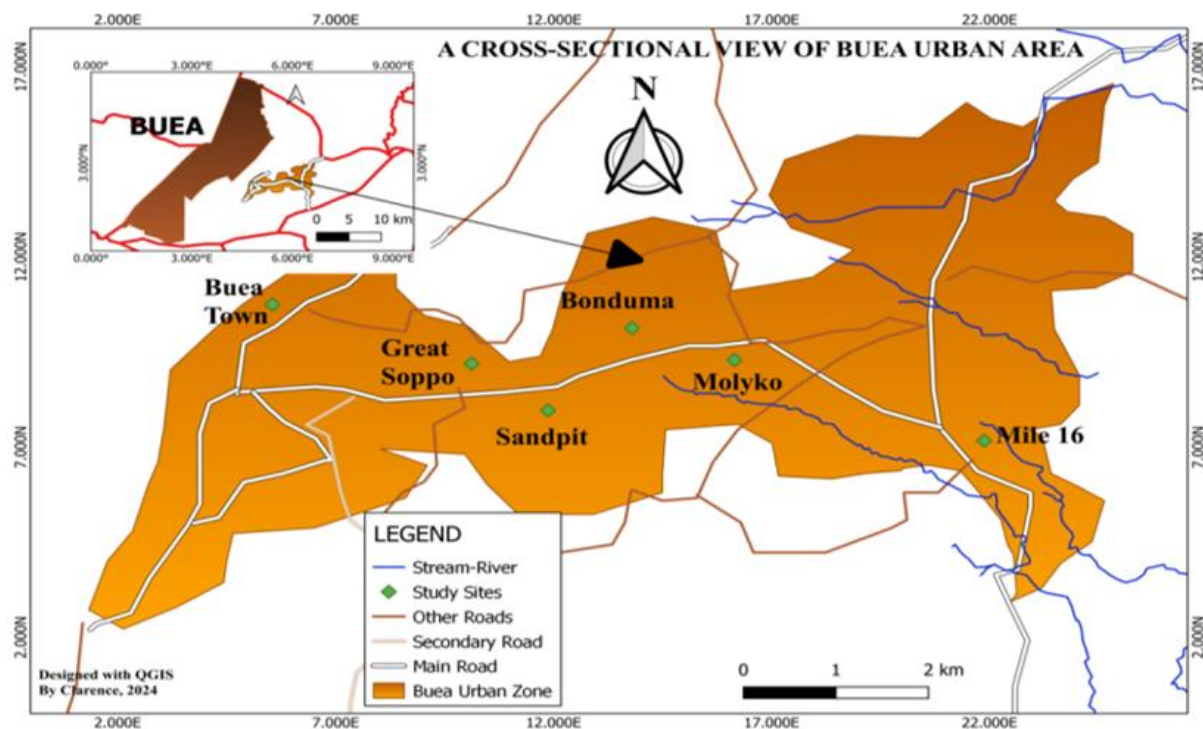


Map 1. The Location of Buea Subdivision in Cameroon

Source: Adapted from the Digital Topographic Map of Buea and Digitized by Author, 2025

The latitudinal (equatorial) location of Buea with imposing effects of Mount Cameroon, the town has a mélange of montane and equatorial climates with high relative humidity and mild

atmospheric temperature. Mean annual rainfall is above 2500mm, but to Folifac *et al.* (2009), it ranges from 3000 - 5000 mm (BCDP, 2012). Mean annual temperature in the region is 28 degrees centigrade (Balgah *et al.*, 2017). The relief of the municipality extends progressively from 400m above sea level to 4100m at the summit of Mount Cameroon but there are several minor slopes developed from the numerous volcanic cones found within the municipality. These climatic and relief characteristics have intensified the challenges of spontaneous housing construction by increasing the risks of erosion, landslides, and flooding in unplanned settlements such as Buea Town, lacking proper infrastructure. Buea has a peculiar climate, relief, vegetation, water resources and soil that have overtime attracted people to settle in the region and carry out diverse socio-economic activities (Map 2).



Map 2. The Cross-Sectional View of Buea Urban Area with Study Sites

Source: Conceived and Designed by the Author (2024)

With respect to the human settings, Buea is made up of heterogenous Population and diverse socio-economic activities. It has a total surface area of about 870 km² (Orock *et al.*, 2017), with an estimated population of 810,000 inhabitants in 2023 and a population density of approximately **932** persons/km² (Regional Institute of Statistics, Buea and BUCREP, 2025). The population has spatially settled in several localities with a majority concentrated in the center of the town and some at the peripheries. The rapid growing population of Buea has intensified housing demand, leading to the rapid expansion of spontaneous settlements that challenge effective urban planning and service delivery.

3. Methods

The study was investigatory and explanatory in nature, adopting the mixed research methods,

which involve qualitative and quantitative techniques. The investigatory approach facilitated inquiries on the expansion of Buea urban area and the development of spontaneous settlement, the current state and impacts while the explanatory approach broadened inquiries on the effects on services and adaptation strategies. The adaptation of the mixed methods provided the researcher with multiple advantages while their biases were eliminated.

The targeted populations of the study were the households within Buea, workers of the municipal local council, NGOs and Regional Delegation of Housing and Urban Development. Through simple random sampling, 200 respondents were selected for questionnaire administration while structured interviews were conducted with key stakeholders on the current state of spontaneous settlement, challenges and the way forward.

Table 1. Questionnaire Administration

Sample sites	Population (Approximated figure for 2025 in thousands)	Administered Questionnaires	Percentage (%)
Mile 16	33	30	15
Molyko	95	45	22.5
Bonduma	31	25	12.5
Sandpit	36	35	17.5
Great soppo	32	30	15
Buea Town	38	35	17.5
Totals	265	200	100%

Source: Fieldwork (2025)

Table 1 shows how questionnaires were administered in the 6 sample sites. 45 questionnaires (22.5%) were administered in Molyko which happens to be the highest because the area is large and witnesses more scenarios of spontaneous development as compared to its counterpart Bonduma with just the least administered questionnaires of 25 (12.5%). Buea Town and Sandpit followed with 35 questionnaires each (17.5%) while Mile 16 and Great Soppo is the second least with 30 questionnaires (15%) administered.

Added to these primary data sources were focus group discussions, field observation and field measurements. These were supplemented with secondary data obtained from magazines, published related articles, and offline libraries.

The qualitative data of the study was analyze using content analysis while quantitative data was analyze using descriptive and inferential statistical methods in order to established frequencies, percentiles, relations and projections. The established results were presented on figures, histograms, pie charts, and tables. Two research assistants were hired during field data collection in order to solve the issues of large spatial scope, while the responses of the respondents were kept confidentially.

4. Results

The results of the study have been presented sequentially, starting from the socio-economic and demographic characteristics of the respondents that were crucial for human habitations,

followed by presentation of results on the trend of population growth in Buea, the factors responsible for population increase in Buea and the current state of spontaneous settlements. Furthermore, the challenges of unstandardized housing number have been analyzed, likewise, the adaptation strategies to the challenges of spontaneous settlements. The details of these have been presented in the subsequent paragraphs.

4.1 Socio-economic and Demographic Information of Respondents

This section has analyzed the socio-economic and demographic characteristics of the respondents, taking in account the age range of the respondents, gender, occupations, levels of education and monthly incomes, amongst others (Table 2).

Table 2. Socio-economic and demographic information of Respondents

Characteristic	Category	Frequency	Percentage (%)
Age Range	18-25 years	40	20
	26-35 years	60	30
	36-45 years	50	25
	46 years and above	50	25
Gender	Male	110	55
	Female	90	45
Occupation	Farmer	20	10
	Business	55	27.5
	Civil Servant	45	22.5
	Student	50	25
	Unemployed	30	15
Level of Education	No formal education	15	7.5
	Primary	25	12.5
	Secondary	70	35
	Tertiary	90	45
Level of income per month	Less than 50,000 FCFA	40	20
	51,000-100,000 FCFA	55	27.5
	101,000-150,000 FCFA	40	20
	151,000-200,000 FCFA	35	17.5
	Greater than 250,000 FCFA	30	15
number of persons in a house	<3	30	15
	4-6	80	40
	7-9	50	25
	10+	40	20
	Non-National	20	10

Source: Fieldwork (2025)

Based on Table 1, the highest percentage of respondents (23%) resided in Molyko, suggesting that this area was having a significant presence of the population under study, potentially correlating with a higher incidence of spontaneous housing. Following this, Buea Town and Sandpit each accounted for 18% of the respondents, indicating that these areas represent a considerable portion of the study population. Mile 16 and Great Soppo each hosted 15% of the respondents, while Bunduma had the lowest representation at 13%. This geographical distribution was important for understanding the spatial dynamics of spontaneous housing and its localized impacts on urban planning within Buea Municipality.

The largest segments of the respondents (30%) were within the 26-35 years age range, indicating a significant proportion of young adults and early-career individuals in the study population. This age group was actively seeking for housing and establishing their lives, potentially making them more susceptible to the challenges of the formal housing market and more likely to consider spontaneous housing options. Following this, the 36-45 years and 46 years and above age groups each constituted 25% of the respondents, representing a substantial portion of the adult population. The 18-25 years age group accounted for 20% of the respondents. This age distribution provided a demographic context for understanding housing needs and urban development patterns.

The majority of the respondents (55%) were male, while 45% were female. This slightly higher representation of male respondents provided a gendered dimension to the study, allowing for the consideration of potential differences in housing experiences, access to resources, and engagement with urban planning processes based on gender.

The largest occupational group among the respondents were engaged in Business (28%), indicating a significant entrepreneurial or self-employed segment within the study population. Students constituted the next largest group (25%), followed by Civil Servants (23%). The Unemployed represented 15% of the respondents, and Farmers accounted for 10%. This diverse range of occupations reflected the economic landscape of Buea urban area and likely influences housing affordability and choices, potentially explaining the need for more accessible, spontaneous housing options for some segments.

A significant majority of the respondents had attained Tertiary (45%) or Secondary (35%) education, indicating a relatively educated population within the study. Those with Primary education accounted for 13%, and respondents with No formal education represented 8%. This level of educational attainment suggested a potential awareness of formal processes and regulations, yet the prevalence of spontaneous housing indicated that other factors, such as affordability and accessibility, may outweigh this awareness.

The largest group of respondents (28%) earned between 51,000 and 100,000 FCFA per month, indicating a significant segment with moderate income levels. Following this, 20% earned less than 50,000 FCFA, and another 20% earned between 101,000 and 150,000 FCFA. 18% earned between 151,000 and 200,000 FCFA, and 15% earned more than 250,000 FCFA. This income distribution highlighted that a substantial portion of the population had relatively limited financial resources, likely contributing to the demand for more affordable, spontaneous housing solutions.

The most common household size among respondents (40%) was 4-6 persons, indicating a significant number of medium-sized households. Following this, 25% of respondents lived in households of 7-9 persons, and 20% in households with 10 or more persons. Smaller households with less than 3 persons accounted for 15%. Larger household sizes could put greater pressure on housing and infrastructure, potentially contributing to the development of or residence in spontaneous settlements where housing might be more readily adaptable or affordable for larger families.

A significant majority of the respondents (50%) lived in their current area for over 10 years, indicating a substantial level of long-term residency and established communities, even within areas characterized by spontaneous housing. An additional 30% have resided in their area for 5-10 years, while 20% have lived there for less than 5 years. This suggested that spontaneous housing areas were not necessarily transient and often hosted established populations with long-standing ties to the community.

The vast majority of respondents (90%) were of National origin, while 10% were Non-National. This indicated that spontaneous housing in Buea urban area was primarily a phenomenon driven by the housing needs and circumstances of the national population, although a smaller segment of non-nationals also resided in these areas.

4.2 Trend of Population Growth in Buea Municipality

In order to analyse the impact of spontaneous settlements in Buea Municipality, investigations were done on trend of population growth, a driving factor for existing unplanned settlements in the area. The population trend line revealed that Buea Municipality had a very low population as of 1990 which stood at 90,083 persons and increased exponentially to 200,000 persons in 2005.

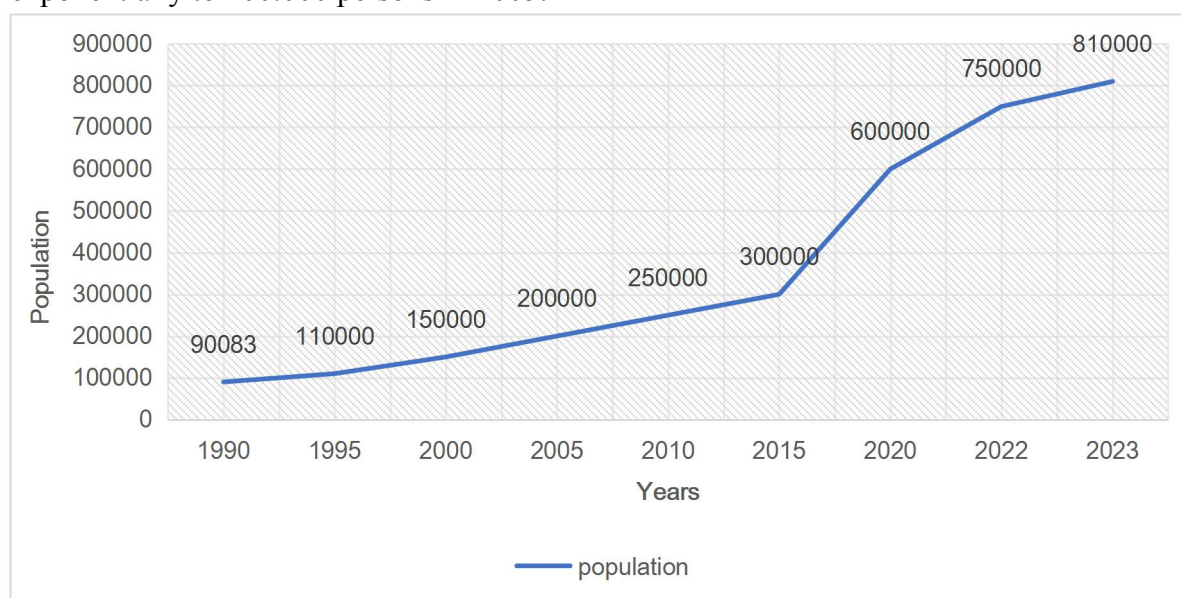


Figure 1. Population Trend in Buea from 1990-2023

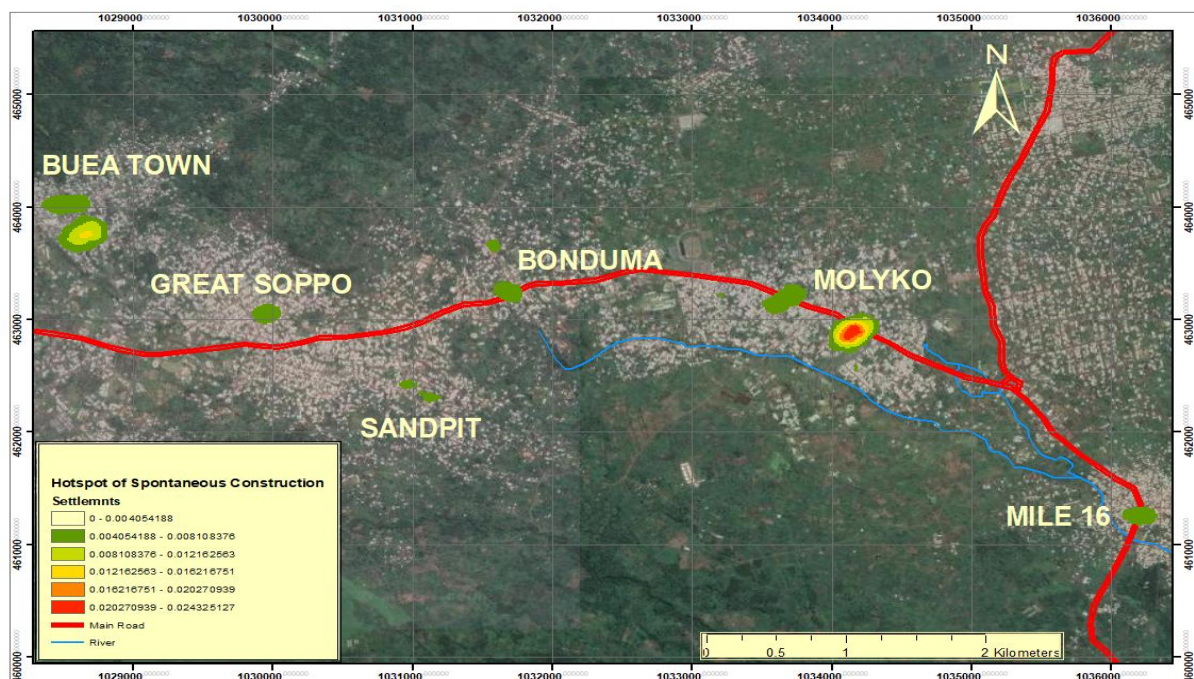
Source: Institute of statistics, Buea Sub-Division (2024)

From 2005, it went to 600.000 persons in 2020 and 810,000 persons in 2023. This inflated growth has been encouraged by the creation of higher institutions such as the University of Buea, HIBMATS University Institute of Buea, Catholic University and National Advanced School of Public Works Annex Buea amongst many others. Also, increasing employment opportunities such as teaching, wholesaling, retailing, and agricultural activities such as urban and subsistence farming have attracted a great number of people to this municipality. However, the increase in the population has outpaced the carrying capacity and the number of accommodations, thus, pushing people to settle on unstable and unplanned areas. Examples of these were very common in Muea, Mile 16, Ndongo and Dirty South where the living conditions of most urban dwellers are below standards as compared to those on stable and planned areas such as Clerks Quarter, Government Residential Area and Bomaka which is semi-planned.

4.3 The Current State of Spontaneous Housing Construction in Buea

In Buea urban area, the following are easily observed: the presence of planned and unplanned settlements, the juxtaposition of houses (spontaneous construction), and the non-numbering of houses, narrow streets and passage ways, poor waste disposal and the construction of houses on risky zones. These were urban planning lapses made by past and present stakeholders in Buea which would have been avoided if GIS techniques were used in the management of the urban space.

Field study investigated the prevailing urban layout of some of the areas where respondents resided, which could indicate the extent of formal planning and the context within which spontaneous housing occurred as seen on map 3 and plates 1-4.



Map 3. Hotspot of spontaneous housing construction in Buea urban areas

Source: Field Investigation, 2025

Map 3 indicates the spatial distribution of hotspots of spontaneous housing construction in Buea urban areas. Molyko and Buea Town dominate the presence of spontaneous housing construction. While Sandpit, Bonduma, Great Soppo and Mile 16 constitute the least. All these indicate the way houses were constructed spontaneously which does not tie to the 2004 Urban Planning Law of Cameroon. There is no clear article or section on standard housing but a number of articles have explained partially on it as seen below.

“Article 56 of this law explains the core legal requirement for a “standard” house in Cameroon. It mandates that every dwelling, regardless of cost, must be structurally sound, safe from fire hazards, and have adequate ventilation, light, and sanitation.

*While Article 117 and 118, section 74 explain what qualifies as a social housing operation. It is one intended for low-income populations and carried out by the State, Local Authorities, or approved social organizations. It states that for these social operations, the administrative procedures (“les formalités administratives”) are **simplified**. This implies a faster and potentially cheaper process for obtaining building permits, reducing administrative costs and delays that typically make housing more expensive.”*



Plate 1. Spontaneous Housing Construction in Mile 16

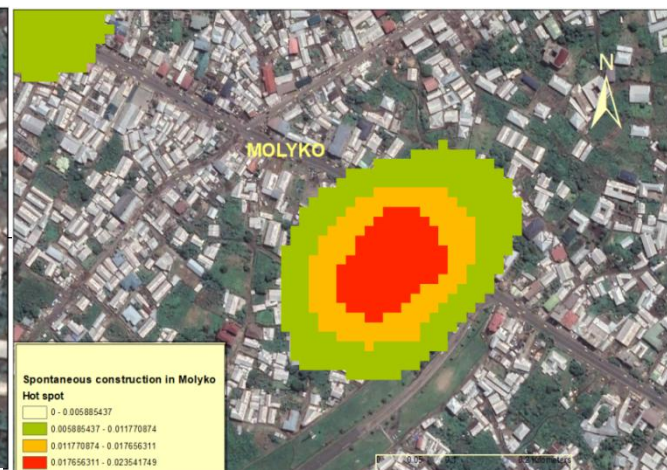


Plate 2. Spontaneous Housing Construction in Molyko

Source: Extracted from Google Earth Map, (2025)



Plate 3a and b. Spontaneous Housing in Molyko Hotspot without access

Source: Field work, (2025)



Plate 4a and b. Raising of fence on someone's premise in Molyko

Source: Field work, (2025)

On plate 2 hotspot at Molyko, the study found out that, some houses were constructed without having access road leading to them (Plate 3a and b). Plate 4a and b illustrates the raising of a fence on someone's premise. From plates 1-4 and map 3, the outcrop of houses in these areas were like grains of rice poured on the floor without any pattern of construction.

4.4 Challenges of Unstandardized House Numbering

Field study determined the practical impact of the absence of formal addressing systems, common in spontaneous settlements, on residents' access to essential services (Figure 2).



Figure 2. Bar Chart of Service Delivery Challenges

Source: Field work, 2025

According to figure 2, 60 respondents (30%) identified utility services to have the most frequently experienced challenge due to the lack of standardized house numbering. Emergency services has secondly witnessed considerable challenges caused by lack of standardized house numbering with 50 respondents (25%). While postal services, 40 respondents (20%) noted to be the third service delivery to experience notable challenges due to lack of standardized house numbering. E-commerce delivery poses challenges for 15% (30 respondents), and other unspecified services are affected by 10% (20 persons). This highlighted the tangible negative consequences of informal addressing systems on residents' access to essential services in spontaneously developed areas.

4.5 Extent to Which Lack of House Numbering Affected Service Delivery

Field study was aim at knowing the respondents' overall perception of the impact of the lack of house numbering on the effectiveness of service delivery in their communities. Table 3 illustrates the impact of lack of house numbering on service delivery in Buea urban areas.

Table 3. Knowledge on Perceived impact of Lack of House Numbering on Service Delivery

Category	Frequency	Percentage (%)
Significant impact	90	45
Moderate impact	50	25
Minor impact	40	20
No impact	20	10
Total	200	100

Source: Fieldwork (2025)

The highest percentages of respondents perceived the lack of house numbering to have a Significant impact (45%) or a moderate impact (25%) on service delivery in their area, totaling 70%. A further 20% believed it has a Minor impact, while only 10% perceived No impact. This strong consensus on the negative influence of the absence of formal addressing

underscores a key challenge for urban planning and service provision in areas with spontaneous housing.

Based on this fact, if service providers have ever failed to reach an area due to unclear address details, an overwhelming majority of respondents (75%) reported that Service providers have failed to reach their locations due to unclear address details. Only 25% have not experienced this. This blunt finding directly illustrated the practical challenges and inefficiencies caused by the lack of standardized house numbering in areas with spontaneous housing, hindering residents' access to essential services.

4.6 Adaptation Strategies to Challenges of Spontaneous Settlements

Further investigations were done on how urban dwellers within unplanned settlements adapt to series of challenges they often faced. Details were presented below on figure 3.

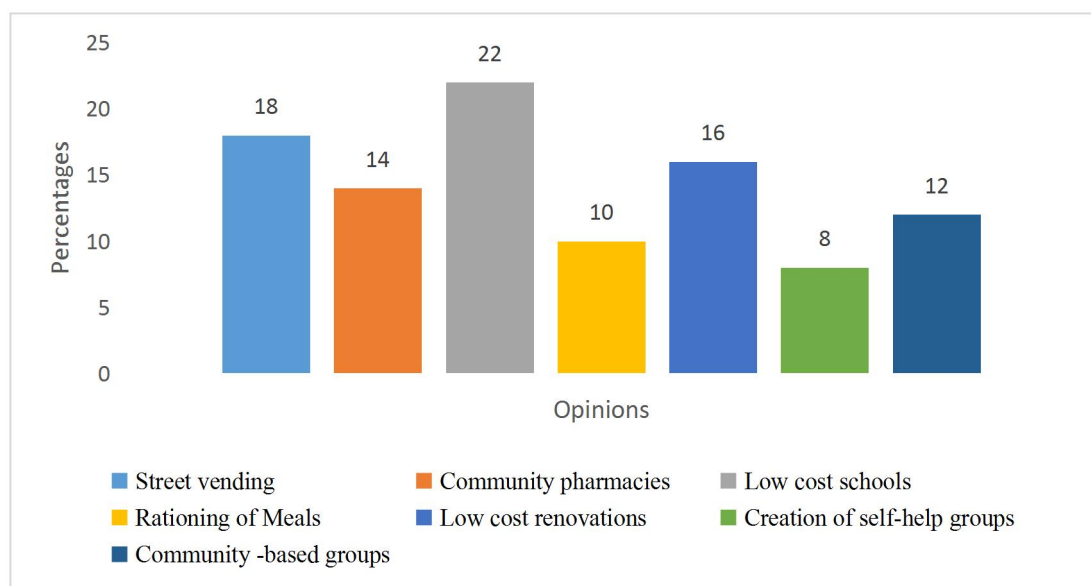


Figure 3. Adaptation strategies of urban dwellers to spontaneous settlements

Source: Fieldwork (2025)

As presented on Figure 3, 22% of the population acknowledged that they adapted to the challenges of poor education by enrolling into low-cost private and community schools. 18% said that due to poverty, they engage into street vending of different goods and services, 16% said they did low cost renovation on their worn-out housing structures while 14% said to cope with health challenges, they bought drugs and went for health checks in community-based pharmacies. Furthermore, 12% pointed out that they created community groups to insure security, 10% said that due to food insecurity, they rationed their meals while 8% claimed that there were self-help groups that provided them with some of their basic needs.

5. Discussion

This section focuses on findings related to the impact and the challenges posed by the absence of standardized house numbering in Buea urban area.

5.1 Impact of Lack of Standardized House Numbering

The absence of standardized house numbering in spontaneous settlements severely hindered service delivery. A significant proportion of respondents (45%) reported that the lack of addressing systems had a significant impact on access to utilities, emergency services, and postal deliveries. Emergency services, in particular, faced frequent delays (47% of respondents reported frequent failures), highlighting the critical need for formal addressing to improve urban management. These findings supported Otiso's (2002) argument that unnumbered houses complicate urban governance and reduce the efficiency of public services.

The study also revealed that unnumbered properties disrupt revenue collection and property taxation, limiting municipal resources for infrastructure development. This aligns with Satterthwaite *et al.* (2020) observations in other developing cities, where informal settlements evaded formal systems, undermining sustainable urban growth.

5.2 Theoretical and Practical Implications

The Multiple Nuclei Model (Harris & Ullman, 1945) provided a useful framework for understanding Buea's decentralized urban growth, where spontaneous settlements emerge as unintended nuclei due to economic and social needs. However, the model's limitations in addressing informal settlements call for adaptive planning strategies that integrate GIS and participatory methods.

The proposed Integrated GIS and Urban Planning System Model offers a promising solution for mapping informal settlements, improving service delivery, and enhancing decision-making. By leveraging spatial data, municipal authorities can better manage urban expansion and allocate resources efficiently. This aligns with UN-Habitat's (2016) recommendations for data-driven urban governance in developing spatial databases.

6. Conclusion

Spontaneous housing construction in Buea urban area represents a complex, multi-dimensional challenge that has far-reaching implications for sustainable urban development. This study focused on the nature of spontaneous settlements and the challenges posed by the absence of standardized house numbering. The findings revealed that spontaneous housing often lack basic infrastructure, disrupt land use patterns, and encroach on environmentally sensitive areas, exacerbating urban planning challenges. The absence of standardized house numbering significantly hinders service delivery, particularly for utilities, emergency response, and waste management, while also complicating revenue collection and urban governance. The study underscored the need for integrated solutions, including the adoption of Geographic Information Systems (GIS) for spatial planning, participatory approaches to engage communities, and policy reforms to improve housing affordability and infrastructure provision. By addressing these gaps, Buea can achieve more sustainable urban development, balancing growth with equitable service delivery and environmental conservation. In conclusion, spontaneous housing remains a critical issue in the urbanization process of Buea, in the context of a rapidly growing urban population and as such,

interwoven strategies must be timely implemented. For example, coordinated efforts are required from government agencies, planners, and communities.

Recommendations

Based on the research findings the following recommendations were offered for key stakeholders including the government, Buea Municipality, and utility agencies.

To the Government

The government should reinforce Legal Enforcement of Planning Laws by enforcing the 2004 Urban Planning Law and the 1974 Land Tenure Ordinance to regulate informal development. She also needs to punish defaulters of illegal land subdivision and construction in unauthorized zones.

To the Buea Municipal Council

The council should roll out standardized house numbering by launching a comprehensive, GPS-based house numbering program in spontaneous areas of Mile 16, Molyko, Sand pit, Great Soppo, etc. They need to also integrate house numbers into utility billing systems and service delivery frameworks. The council also has to strengthen development control through GIS by implementing GIS for land use monitoring, plot verification, and planning enforcement. Also, they should use satellite imagery to track growth patterns and identify high-risk settlements.

To Utility Companies (ENEO and CAMWATER)

ENEO and CAMWATER needs to integrate house numbering into billing and service delivery. This can be done by conjoining with Buea Council to support billing records with physical address systems.

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Authors' contributions

Mr. Agbornyong Clarence Enow was responsible with the GIS, data collection and analysis as well as the drafting of the manuscript. Prof. Balgah Sounders was responsible with the Methodology and revising of the manuscript, while Dr. Zem Charity was responsible with the presentation and revision of the manuscript. All authors read and approved the final manuscript.

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Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Macrothink Institute.

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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