

The Implication of Urban Spatial Expansion on the Socio-Economic Development in Obala, Cameroon

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ABSTRACT

The rapid population increase in world cities, not excluding Africa and sub-Saharan African cities has had a considerable effect both on the space occupation and on the inhabitants themselves. Cameroon in general and Obala town in particular have witnessed a rapid increase in their population. Such a rapid increase has opened flood gates for land grabbing, creating problems including inadequate electricity supply, the absence of portable water, insecurity, and anarchy in construction. It is in furtherance of these issues that this paper seeks to examine the trend of urban spatial expansion and its implications for socio-economic development in the town of Obala. The research made use of secondary source data (published articles, reports, and theses). Primary source data was sourced from the administration of 116 questionnaires, some of which selected 13 quarters of the Obala urban space. Interviews and focus group discussions were organised with the objective of gathering information in Obala. To determine the rate of urban spatial expansion, a time series analysis of the years 1987, 2004, and 2020 was conducted with the use of multiple temporal Landsat satellite images. The result reveals that migration (immigration), the rehabilitation of the National Road, and the searches for employment opportunities have accelerated the urban spatial expansion in Obala. That is why urban space increased from 7.01% in 1987 to 9.01% in 2004, and in 2020, it hit 16.9%. In the social domain, the extension of electric poles and the construction of health centres and educational facilities have moved forward. In the economic domain, the emergence of commercial institutions (banks), market installations, and an increase in investment rates have increased the magnitude of economic activities in Obala.

Keywords: Urbanisation, urban expansion, socio-economic development, population growth, Obala.

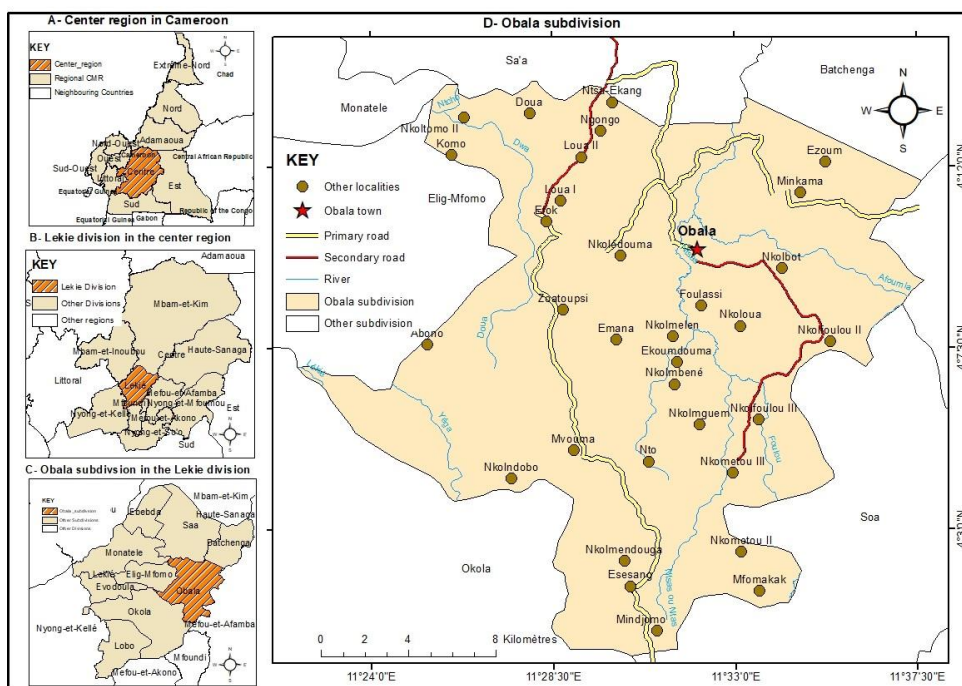
INTRODUCTION

Urban spatial expansion has become a significant trigger factor to social and economic development of African cities. It does not only reveal the successive colonisation of space by built-up area, but as well x-ray the ramifications accrued from the expansion. Understanding the drivers of urban expansion worldwide is striking and important not only for study purposes but also for state authorities to be guided during developmental plans. This paper seeks to address the difficulties that accompany social and economic development of a town with Obala as the major case study. Several authors have written on urban expansion and its ramifications to a city. The work of Paulsen (2012) argues that urban land dynamics are influenced by population growth and income elasticity as opposed to Li et al. (2011), who revealed that the expansion of urban areas is due to urban developmental strategies put in place. The study carried out on Xiamen Island, China, reveals that the island's spatial expansion is as a result of developmental strategies put in place by the authorities. This involves the change in the administrative status of a region, industrial distribution, transport infrastructural development as well as the population distribution of the area. Authors

such as Guastella et al (2019) on the expansion of European cities revealed that most European cities' urban expansion was as a result of the decline in employment and population density from the city centre to the peripheries.

In Sub-Saharan Africa nowadays, nations and cities are witnessing rapid urban expansion. This is corroborated by research from Barau et al. (2015) that revealed a rapid increase in urban expansion during the 19th, 20th, and 21st centuries triggered by population growth and migration. Such conclusions are confirmed by the work of Cobbinah & Amoako (2012) that demonstrated the expansion of the urban milieu in Kumasi. These authors in their work describe the loss of urban land due to the rapid Metropolisation of the town instigated by factors such as congestion and the conversion of peri-urban land into residential settlement. The phenomenon of urban expansion has been a bosting factor in the socio-economic development of a good number of cities in the world. This situation can be traced back to the period of the industrial revolution in Europe Yozgat (2014). On the same axes, Jiang et al. (2019) put forward the argument that well-structured industrial planning for urbanisation leads to a rapid increase in socio-economic development. Housing development is important and is considered a driving factor in the expansion of the milieu. According to Yang et al. (2018), increases or decreases in housing affect not only urban or rural expansion but also the socio-economic development of the areas. Some affirm that in an inverse sense, the rapid economic growth of cities influenced by the sporting activities affects areas in all aspects of development and a high proportion of socio-economic sector development Salvati & Zitti (2017).

Obala Sub-Division is one of the historical towns in Cameroon during the rule of the colonial master. The town has served as a transitional town for the buying and selling of goods and services from the surrounding villages to Yaounde and further to the coastal town of Douala. According to local authors like Tende and Kengmoe (2020) the urban overspill in Bafoussam is due to the significant increase in built-up area and a drop in vegetation while Ndock Ndock (2015) on the same line reveals that most towns situated beside metropolises and influential cities are influenced by the major cities. He cited the example of the Soa satellite town in Cameroon, situated some 30 kilometres from the political capital Yaounde. The increased population in search of settlement land on the outskirts of the metropolis finds itself in neighbouring small cities like Soa, thus being considered as migrants. Obala town is in the same position as Soa, and is considered a satellite town situated some 40 kilometres away from Yaounde (Figure 1).



Source: Modified by Mbukwe from the National Institute of Cartography, 2022

Figure 1: Location of the study area.

The town is located between longitudes 4°30'00" and 4°12'00" north and 11°24'00 and 11°37'30" east and is bounded geographically to the North by Sa'a and Monatele, West by Elig-Mfomo, South by Okola, and East by Batshenga, soa, and Edzendouan, and the locality is at an altitude of about 900m, which is on Mount Loua.

METHODOLOGY OF THE STUDY

Data collection was done through primary and secondary sources for a qualitative and quantitative research. To determine the rate of urban expansion in the area, three specific Landsat 8 satellite images of 1987, 2004, and 2020 were downloaded. These images were used in determining the evolution of the built-up area over 33 years. Some 116 questionnaires were administered to households in order to collect data on respondent perception on the factors responsible for urban expansion. A set of electronic instruments such as cell phones and tablets were used to insert our question into the phone and tablet thanks to some application development for research by some impressive researchers and institutions around the world. This application facilitated and permitted the data collection to overcome the problem of time. It was as well good because it permitted the collection and direct saving of data on a server online that could be used at any time for treatment and analysis.

Taking into consideration that this research focuses on the urban expansion of the Obala town, it was necessary to select households residing in the various quarters of the urban area. A sample of 2% of the household present per quarter was used. With the implementation of the 2% sample size of the 5834 households in the town's total population of 29054, the 2% of households to be questioned per quarter was chosen on the basis of the number of households each quarter had. Taking into account that some quarter's household numbers were much higher than others, it was better to select 2% of each in other to avoid bias as much as possible. This was done as follow:

Using the formula

$$\frac{\text{N° of Household}}{100} \times 2\%$$

Table 1 show the percentage of households that were administered the questionnaire during the field data collection that served as the sample size for the research (Table 1).

Table 1: Sample size distribution in the Obala

QUARTERS	HOUSEHOLD	2% OF THE HOUSEHOLD
ABOKONO	359	7
BIKOGASSI	318	6
EBOLAKOUN	170	3
ELIG-BESSALA	786	15
ELOT 1	1219	24
ELOT 2	179	3
FOULASSI	253	10

MBOUA 1	147	2
MBOUA 2	51	1
NDJONG-MEZEGUE	591	11
NKOLBIKOK	1355	27
ZONE 1	90	1
ZONE 2	316	6
TOTAL	5834	116

Source: Field work and BUCREP 2005 Population census

RESULTS AND DISCUSSION

Results from findings adhere to the fact that the Obala satellite town has increased in space and population. To be clear is like making a comparison on zones covered by built-up and the one occupied by vegetation with reference to the surface areas of the locality. Thus is a way to find out if the built-up has increased over the vegetation. Obala is an area, like others in the world, going through the process of urban expansion. With the view or better still perception of those household in the Obala subdivision gives a clear idea of some reasons of the urban spatial expansion.

Table 2: Perception index of the household in the Obala sub-division

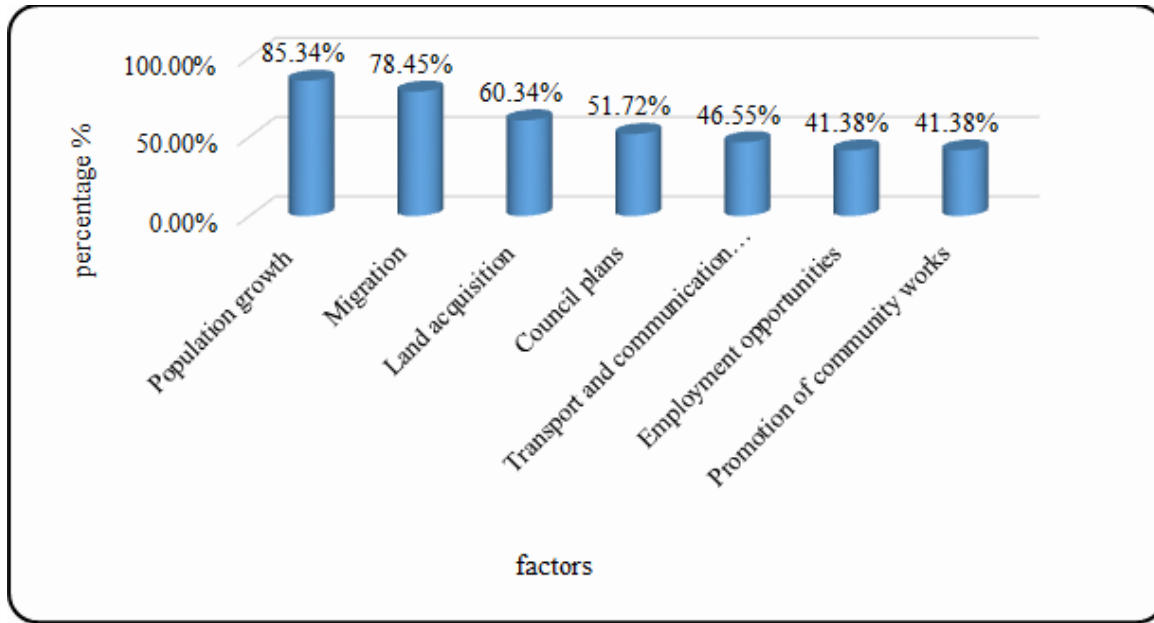
Reason	N°	%
Closeness to the political capital	20	17.24
Influence of the national road N° 1	17	14.66
Agricultural potential	31	26.72
Cheap land	20	17.24
Infrastructural growth	15	12.93
Physical milieu	13	11.21
Total	116	100

Source: Fieldwork, 2021

The table 2 above shows the perception of the household on the potential reasons that have influenced the expansion of Obala. Based on the data on the table 2, 31 out of the 116 households, with a percentage of 26.72%, confirm that the expansion of the area is due to the high agricultural potential the region has to offer. Despite this, the close proximity of the political and the cheap land of Obala are regarded as important reasons for the expansion of Obala based on the data response obtained from the household interview. That is, closeness to the political capital (17.24%) and cheap land (17.24%), according to the responses gotten.

Factors of urban expansion

The factors affecting the rate of urban spatial expansion in Obala Sub-Division are those which play also important roles in the development of the area. The field data after analyses reveals that, the population growth, migration, land acquisition, council plans, transport and communication network, employment opportunity and promotion of community activities, are those affecting the rate of expansion.



Source: Field work, 2021

Figure 2: Factors influencing the urban expansion of Obala

From Figure 2 it is observed that, those dominating are Population growth, migration, land acquisition and council plans with percentages of 85.34%, 78.45%, 60.34%, and 51.72% respectively are those having a high influence on the phenomenon in the area.

Population growth and influence on expansion in Obala

Population growth is a significant factor due to the role it plays in an area. Obala subdivision during the past thirty-three years has had a significant increase in its general population and in its urban population in particular during the years 2000 to the present date. When the population of an area increases, there is generally a change in some sectors, for instance, social and economic. Taking the social section into account, there is a need for the population to have access to houses for settlement; when they are not available, most people resort to relocating to the outskirts of the urban zone. This relocation gives rise to new infrastructural construction, which in turn affects the urban expansion of the Obala subdivision

Table 3: Population of Obala sub-division following the census of 1976, 1987 and 2005

Year	Population
1976	7599
1987	68255
2005	78929
2012	95627
2020	133014

Source: Field work, 2021

Table 3 above presents the evolution rate of the population increase in Obala over the past years till 2020. The high flood rate of migrants has contributed a lot to such increase in population.

Migrant activities in Obala

Migration has been a factor that brings many changes in an area when it comes to development. In the Sub-divisions, we find a high number of migrants (immigrants) who arrived in the subdivisions far back in the 1990s. The migrants in Obala come from almost all regions of Cameroon and account for 5.6% of the population of Obala. The migrant tribes we found are the “Bamileke” from the western region and the “Haoussa” from the north and far north regions. The “Bamoun”, the “Bassa”, the “Ndong”, the “Elende”, and “Yambassa”. There is also the presence of migrants from other countries, like Mali (2.8%), Nigeria, and Niger (1.4% each). These migrants engage in a variety of activities that influence Obala’s expansion rate. We can see from the interviews that these migrants have built many infrastructure projects, such as schools and clinics, on the outskirts of the city where no one existed. Due to this, the outer area witnesses some changes, and we see the arrival of newcomers who decide to settle near the infrastructure. Thus, influencing urban expansion with the construction of new houses, new markets, and other essential needs.

In Obala, there are a variety of activities being carried out by both the local population and the migrant population. Migrants dominate with a percentage of 56.33%, most of which is in the commercial sector. This sector deals with agricultural products, electronic products, and construction materials.

Plate 1: Migrants commercial activities in Obala



Source: Mbukwe 2022

Photo A and B in plate 1 both show entre of building materials chopped by some migrants in Obala.

Built-up area expansion

The land is being occupied by the construction of houses for settlement, especially by the migrants coming from the neighbouring towns and localities in search for land. Due to this, we have noticed development and the creation of new quarters in the town of Obala. This rapid increase in the construction of houses on pieces of land that in the past 5 years had no houses at the peripheries is now covered with impressive and modern houses. This rapid increase in the construction of houses on the new side makes the town more favourable for expansion in its surface area, thus favouring the urban spatial expansion of the Obala subdivision.

Plate 2: Housing infrastructures in Obala



Source: Mbukwe 2022

From plate 2 above picture A, shows some housing infrastructure still under construction in one of the new quarters in Obala and in picture B, some houses in construction and others completed in the same quarter. Due to the high number of migrants from the surrounding areas and the rehabilitation of the national road number 1, the areas depicted in the map (figure 1) were vacant about ten years ago, and some of these private individuals decided to make use of the available empty land. On the field, it was noticed that the local population also produced impressive and modern houses on the outskirts of Obala. For many years, there were no houses in these areas.

Transport and communication infrastructures

The urban spatial planning of the Obala subdivision is seen through the transport and communication networks. Over the past year, the town has gotten infrastructure like the railway station, which is used by a very large number of people who travel from the north to the southern parts of the country. The rehabilitation of these roads by the council opens the way to the peripherals quarters, which at first were inaccessible. Due to this, the urban population has the chance to reallocate and look for areas where they can carry out their construction activities, like houses. Taking into account that the urban area of Obala has been rapidly growing over recent years, the opening of the peripheries plays an important role in the urban spatial expansion of the area.

Plate 3: Road rehabilitation by the municipal Council

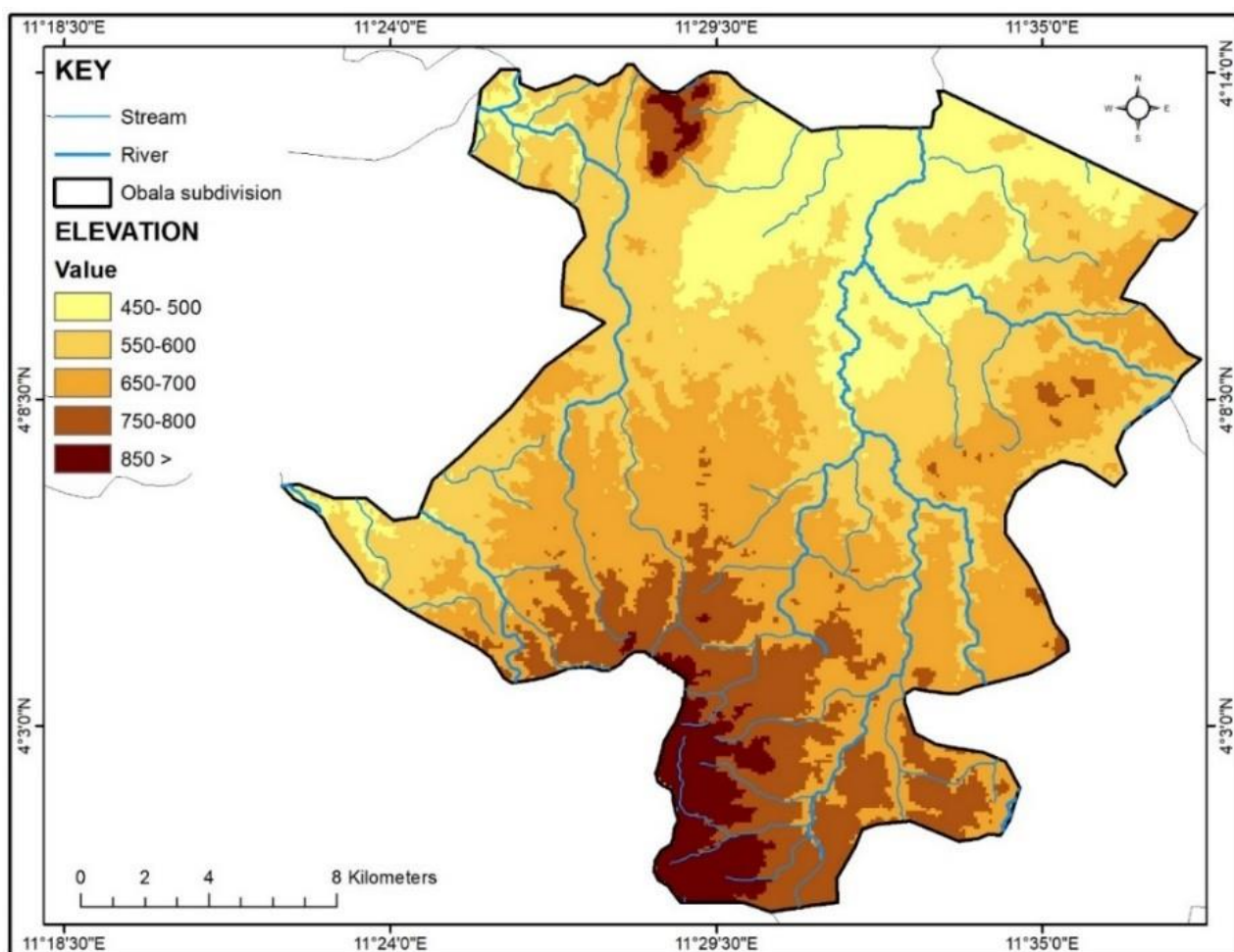


Source: Mbukwe 2022

From Plate 3, we observe, through pictures A and B, the work being done by the municipal council in the rehabilitation of the road leading from the town centre to the peripheries of the different quarters. These will help the local population to move in and out with no more difficulties.

Topography an influence on expansion in Obala

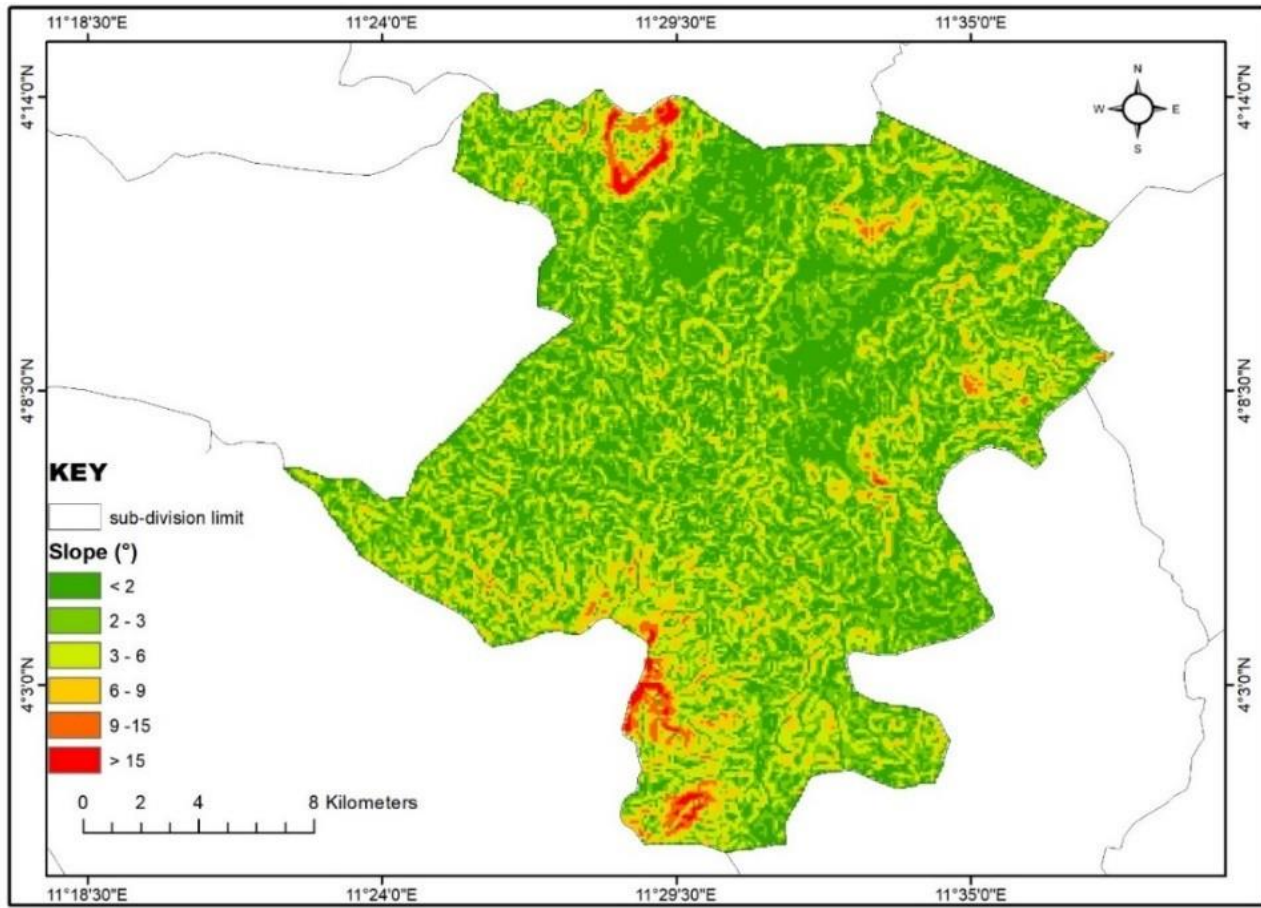
In a territory or zone, the built-up area is affected by the topography of that area itself. It is obvious that if the topography does not favour the implantation and creation of built-up areas, there is no need for the territory to witness urban expansion. Consider our study area: it has good topography and a flat land surface, which has encouraged the establishment of its inhabitants and the development of built-up areas in recent years. For other reasons, if the subdivision had a roughly topographic nature, the case would have been different as observe on figure 3.



Source: NIC, 2014

Figure 3: Hydrography and Topography of Obala

On the same line, the slope of nature also contributes to the favouring of the creation and increase of built-up areas, which give way to urban expansion. The Obala subdivision has a good slope, which has helped increase the built-up areas over the past years. The subdivision elevation varies from 0 to 900m. We find no step slope, which could be a blockage to urban expansion which is best observed on figure 4.



Source: Digital elevation model (DEM) of Cameroon

Figure 4: Slope nature of Obala

The physical factors, which include relief, topography, hydrology, and slope, are really impacting the urban expansion of the subdivision on all sides. The relief of Obala is an advantage for the harmonious development of the town. At the same time, the slow and gentle slope and the flow of water bodies (rivers and streams) are both favourable and unfavourable for urban expansion. Taking the case that Obala, like any other area, is expected to grow and overcome her original implantation, due to the presence of the many rivers that surround the town and the fact that Obala is a town situated on a plateau, it is obvious that it faces some challenges. With observations and carrying out, the town of Obala’s growth is noticeable in the east, where the relief is more uniform. In 1987 the area was already at it grown up state but the development level was still very low. While from the year 2004 to 2020 are period were a good number on development plans where been implemented by the local authorities and some local and international NGO’s in the area.

Time series analyses and influence on expansion in Obala

The conduct of a time series analysis helps in measuring the rate of built-up areas in Obala subdivision. From the result, it is evident that the area has witnessed an increase in the built-up from 1987 to 2020, with a higher rate of increase between 2004 and 2020.

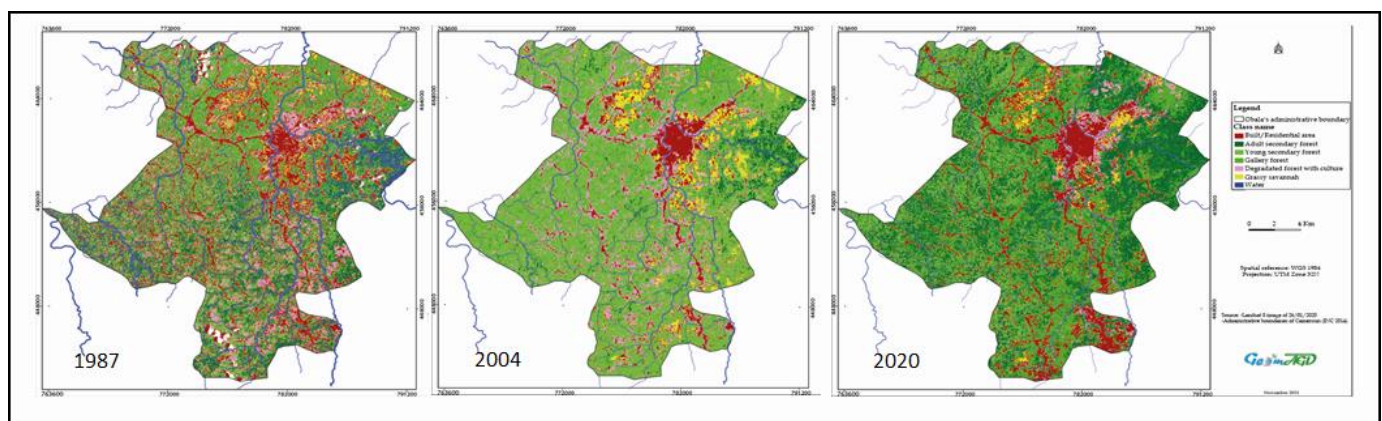
Table 4: Summary of Land use/Land cover evolution over 33years in percentage (%)

Occupation	1987	2004	2020	Total	Annual rate of evolution
Built-up area	7.01	9.19	16.31	30	0.92

Adult secondary forest	16.38	5.51	4.05	25.94	0.78
Young secondary forest	26.92	57.46	1.93	86.31	2.62
Gallery forest	25.61	8.99	20.82	55.42	1.67
Culture	11.64	13.19	33.29	58.12	1.76
Grassy savannah	6.56	5.67	23.6	35.83	1.08
Water	5.88			5.88	0.18

Source: Landsat 7 image/NIC, 2014 of Obala

The table 4 above show the evolution of land use/land cover evolution by the different activities in Obala sub-division for 33years. Considering the fact that, built-up area evolution is an indicator use to define the rate of urban expansion of area as it is in this research work. From the data on the table, built-up areas in Obala in the 1987 occupied a percentage of 7.01%. While comparing with other activities, young secondary forest is the one dominating with a percentage of 26.92%. In the years 2004 the built-up area had a slide increase bringing it to 9.19%. During the year 2020, the built-up area has greatly increase with a percentage of 16.31% though a considerable increase but still lower as compare to the other activities changes in percentage. With these data the expansion base on the built-up area analyses is observed that, from 1987 to 2004 the Obala expansion increase is 2.18% which is low as compare to that of 2004 to 2020 which is 7.12% much higher. It is observed that the built-up area of Obala for the past 33years had a rate of evolution of 0.92% per year compare to the other activities (figure 5).



Source: Landsat Images 1987, 2004 and 2020

Figure 5: urban spatial expansion in Obala Sub-division

Figure 5 show the rate of evolution in the Obala Sub-Division from 1987 to 2020. The colour red is use to represent the Built-up evolution on the figure, when observe it notice is the year 1987 that the Built-up occupied very little Surface area as compare to the year 2020.

CONCLUSION

Urban spatial expansion has triggered socio-economic development of Obala. This article which sought to reveal the implications of urban spatial expansion on the socio-economic development of Obala can adequately conclude that the developmental process of the town has improved. After a series of data analyses, interviews, and questionnaire administrations to households, the findings reveal that the urban spatial expansion is due to its relief nature, which is not characterised by mountains or hills or topography. The cause of the urban expansion is also due to the proximity of the area to Yaounde the capital city of Cameroon which has triggered the rapid increase in the number of infrastructures on the peripheries of the

town. Obala has witnessed a rapid population upsurge over 33 years, which has triggered the spatial expansion of the area with an expansion rate of 0.92% per year. The rate of percentage increase is not really as rapid as it would have been due to its location close to the political capital city, but it has a faster rate than other satellite towns in the same position. This spatial expansion and population increase has led to the social and economic development of the area with improvements in infrastructure and social amenities. The Obala town which was predominantly rural has gradually become urban with the ramifications of such changes accrued. The satellite town however is fast expanding in an unplanned than planned manner which warrants rapid State action in order to salvage the situation. The urban anarchy observed is accompanied by land grabbing and anarchy which if not checked might mar the growth and development of Obala.

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