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REPUBLIC OF CAMEROON
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THE UNIVERSITY OF YAOUNDE I
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POST GRADUATE SCHOOL FOR SOCIAL AND EDUCATIONAL SCIENCES
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URBAN SPATIAL EXPANSION AND THE SOCIO-ECONOMIC DEVELOPMENT OF THE OBALA SUB-DIVISION

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DEDICATION

I dedicate this work to my beloved Mother who is of late.

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ABSTRACT

Urban spatial expansion phenomenon which is rapidly taking place in the world today with Cameroon and Obala sub-division in particular is not left out. The phenomenon in the developed world doesn't take place like in the developing world but the factors responsible are almost the same. That is, increase in Built-up areas, migration and population increase which are notice in many past work gone through. This observation have led to the choice of the topic "Urban spatial expansion and the socio-economic development of the Obala subdivision", this to verify the factors in the Obala sub-division.

To verify the rate of urban spatial expansion of the Obala sub-division, the methodological approach consisted in the digitalization and classification Landsat images of three respective years (1987, 2004 and 2020) to bring out the rate of expansion. Interviews, observation and questionnaire was administered to the 116 household selected in Obala urban area, to gather information on the phenomenon of urban spatial expansion effect on the social and economic development of Obala.

The result reveals that the cause of the rapid expansion of the Obala sub-division is due to both the Natural factors and more of the anthropogenic causes. The analyses carried out on the rate of increase of the built-up area in Obala sub-division reveals that, the increase is of 0.92% per year. It increase in 2.18% from 1987 to 2004, 7.12% from 2004 to 2020, indicate a rapid increase in built-up areas. The findings also proved that the urban spatial expansion favoured the social and economic development of the area. This is observed in the increase in the number of health and educational infrastructure and the provision of social amenities like portable water and electricity. There is also the increase and development of new sectors like banking which were not found in Obala but are observed today.

The authority's response to this situation does not seem to be effective, as concrete and sustainable measures are not visible on the ground to overcome some of the challenges observed. The local authorities need to add effort to improve on the social status of the local population and to make sure methods and rules are implemented to control the unplanned urban nature of the area.

Keyword: Urban Expansion, Social Development, Economic Development, Obala Sub-division.

RÉSUMÉ

Le phénomène d'expansion spatiale urbaine qui se déroule rapidement dans le monde aujourd'hui avec le Cameroun et l'arrondissement d'Obala en particulier n'est pas en reste. Le phénomène dans le monde développé ne se déroule pas comme dans le monde en développement, mais les facteurs responsables sont presque les mêmes. C'est-à-dire l'augmentation des zones bâties, la migration et l'augmentation de la population qui sont remarquées dans de nombreux travaux antérieurs. Cette observation a conduit au choix du thème « Expansion spatiale urbaine et développement socio-économique de l'arrondissement d'Obala », ceci pour vérifier les facteurs dans l'arrondissement d'Obala.

Pour vérifier le taux d'expansion spatiale urbaine de l'arrondissement d'Obala, l'approche méthodologique a consisté en la numérisation et la classification des images Landsat de trois années respectives (1987, 2004 et 2020) pour faire ressortir le taux d'expansion. Des entretiens, des observations et un questionnaire ont été administrés aux 116 ménages sélectionnés dans la zone urbaine d'Obala, afin de recueillir des informations sur le phénomène de l'effet de l'expansion spatiale urbaine sur le développement social et économique d'Obala.

Le résultat révèle que la cause de l'expansion rapide de l'arrondissement d'Obala est due à la fois aux facteurs naturels et à d'autres causes anthropiques. Les analyses effectuées sur le taux d'augmentation de la zone bâtie dans l'arrondissement d'Obala révèlent que l'augmentation est de 0,92% par an. Son augmentation de 2,18 % de 1987 à 2004, de 7,12 % de 2004 à 2020, indique une augmentation rapide des zones bâties. Les résultats ont également prouvé que l'expansion spatiale urbaine favorisait le développement social et économique de la région. Cela se traduit par l'augmentation du nombre d'infrastructures sanitaires et éducatives et la fourniture d'équipements sociaux tels que l'eau et l'électricité portables. Il y a aussi l'augmentation et le développement de nouveaux secteurs comme la banque qui n'ont pas été trouvés à Obala mais sont observé aujourd'hui.

La réponse de l'autorité à cette situation ne semble pas efficace, car des mesures concrètes et durables ne sont pas visibles sur le terrain pour surmonter certains des défis observés. Les autorités locales doivent redoubler d'efforts pour améliorer le statut social de la population locale et s'assurer que des méthodes et des règles sont mises en œuvre pour contrôler la nature urbaine non planifiée de la zone.

Mots clé : expansion urbaine, développement social, développement économique, L'arrondissement d'Obala.

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LIST OF ABBREVIATIONS

- **AES sonel** : Applied Energy Service, Société Nationle d'Electricité
- **ADAACAMEROUN** : Association pour le Développement Agricule et Agro-Alimentaire en Zone Rurale au Cameroun
- **ArcGis** : Aeronautical Reconnaissance Coverage Geographic Information System
- **BUCREP** : Bureau Centrale de Recenssement d'Etude de la Population
- **CAMWATER** : Cameroon Water Utilities
- **CCC** : Complexe Chimique du Cameroun
- **CDE** : Cameroun Des Eaux
- **DEM** : Digital Elevation Model
- **ENEO** : Energy of Cameroon
- **ENVI** : Environment for Visualise Images
- **FALSH** : Faculté des Arts, Lettres et Science Humain
- **FEICOM** : Fonds Spécial d'Equipement et d'Intervention intercommunal
- **GDP** : Gross Domestic Product
- **GNP** : Gross National Product
- **GPS** : Global Positioning System
- **GIS** : Geographical Information System
- **HDI** : Human Consumption Index
- **IAO** : Institut Agricul d'Obala
- **INC** : Institut National de Cartographie
- **ISAGO** : Institut Superieure d'Agriculture et de Gestion d'Obala
- **LCR** : Land Consumption Rate
- **MINADER** : Ministère de l'Agriculture et du Développement Rurale
- **NGO** : Non-Governmental Organisation
- **OSM** : Open Street Map
- **PCD** : Plan Communal de Développement
- **QGIS** : Quantum Geographical Information System
- **RGPH** : Recensement Général de la Population et de l'Habitat
- **SONEL** : Société National d'Electricité au Cameroun
- **SRTM** : Shuttle Radar Topographic Mission

GENERAL INTRODUCTION

0.1- Background to the study

The notion of urban spatial expansion is not new. For a long time, geographers and other researchers, such as economists and philosophers, have tried to understand the expansion of towns and cities through the occupation of space. In the past centuries, before the industrial revolution in Europe, urban spatial expansion was witnessed world-wide with a high presence in the cities and towns of western Asia, America, and Europe.

In developed countries, urban spatial expansion in most European countries occurred differently. For instance, in Berlin and Heidelberg, two cities in Germany, the process was influenced by the decline in population and employment density from the city centres to the peripheries and the rapid need to develop built-up areas in the peripheries. Gianni (2019). Aside from European countries, urban spatial expansion has been observed in other locations, such as Xiamen Island in south-eastern China. Here the process was influenced by development policy, urban overall plans, Xinhu Li (2011). In western towns of Asian countries, like Bombay in India, the population (inhabitants) of these cities needed land where they could carry out their agricultural activities. As a result, they shifted from the city centres to the peripheries of urban towns and cities to acquire land for cultivation, causing a decrease in the population of those cities and towns. The decrease in the size of the population present in towns and cities gave way to the creation of new built-up areas with the putting in place of well-belt infrastructure like roads, health centres, and schools to increase the social and economic level of the cities and towns. To be more precise, urban spatial expansion is not observed in the same way throughout the world, even though it is a world-wide happening.

During the period after the 1960s, when a good number of African countries gained independence, the governments of the newly independent countries and their local authorities had to put in place methods through which they could attain and develop their economic and social sectors of activities that resulted from the increase in infrastructure development, such as health centres, educational infrastructures, and transport network and communication infrastructures. In sub-Saharan Africa, many cities have experienced a growth in urban expansion due to the influence of social and economic developments.

The case of Cameroon in sub-Saharan Africa is not different. The aspect of urban spatial expansion has been influenced by the many developmental projects of the state to increase the social and economic sectors of its towns and cities. This has been in health, infrastructure, and industry, which in the long run has influenced the urban spatial expansion of these towns and

cities. The town of SOA, which is some few kilometres from the capital of Cameroon, expanded as a result of the increase in the number of migrants in search of land for settlement and the creation of developmental projects by the state, such as the University of Yaounde 2, (Ndock Ndock, 2014).

0.2- Location of the study area

0.2.1- Thematic delimitation

Following the issue of urban spatial expansion of towns in the world today, Obala is not left out. The research work is limited to examining the urban spatial expansion in Obala town. This is to bring more awareness of the phenomenon in the towns of developing countries in general and Obala in particular.

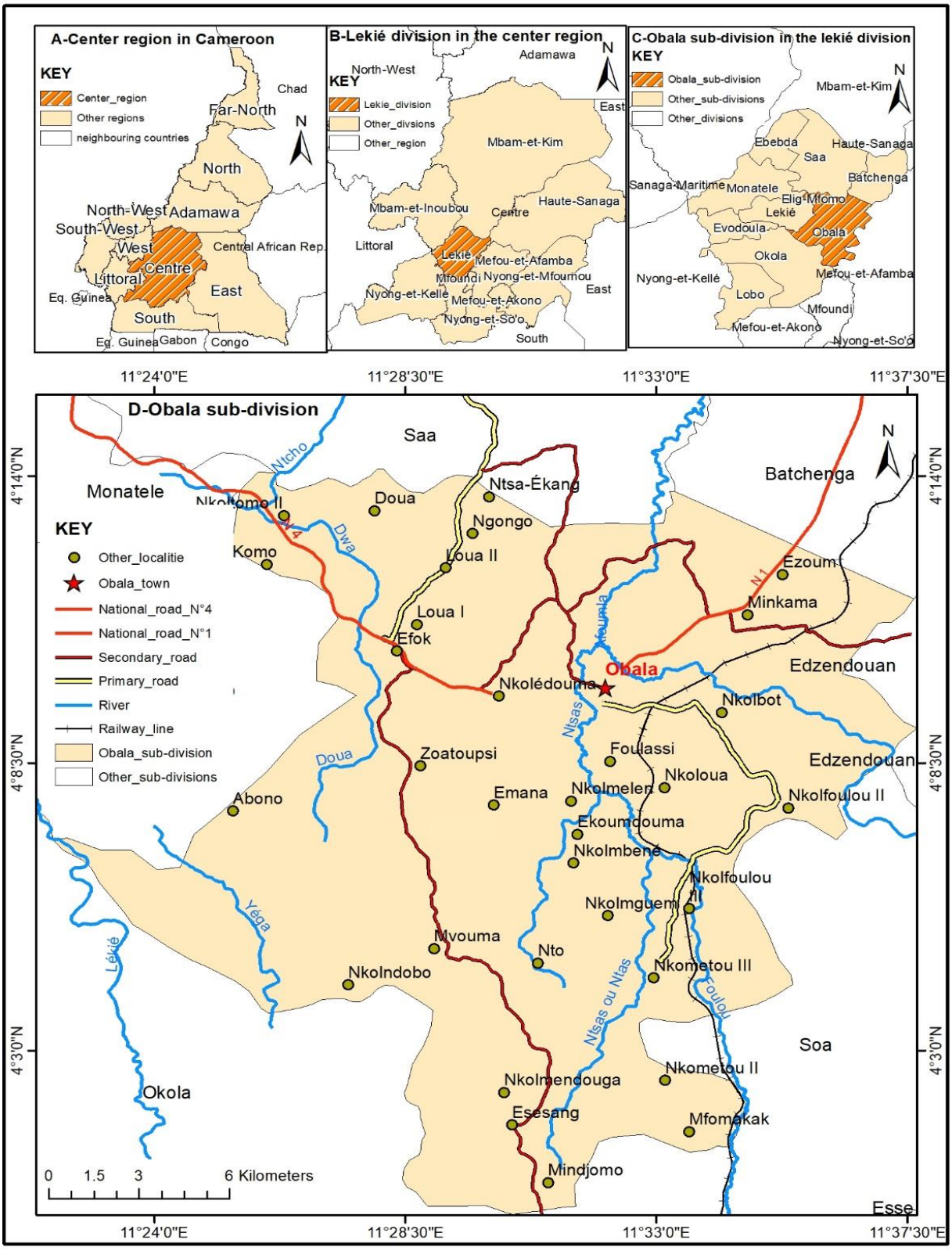
0.2.2- Temporal delimitation

The delimitation of the research work goes from 1987 to 2020. The choice is due to the fact that Obala town during the 1950s witnessed a rapid increase in its population and built-up areas due to some factors. But later, during the 1980s, some of these factors were no longer visible due to the dynamic changes taking place in the town. We need to analyse the new face of the town from the past to present days.

0.2.3- Spatial delimitation

The Obala subdivision is one of the 9 subdivisions that make up the Lekie division, found in the central region of Cameroon. The subdivision of Obala was created in the year 1955 with reference to the decree n° 231 of the high commissioner of the French republic to Cameroon. The Obala subdivision is situated some 40km away from Yaounde on the Yaounde-Bafia highway and also some 50km from Monatele. The town is located between longitudes 4°30’00" and 4°14’00" north and 11°24’00 and 11°37’30" east and is bounded geographically from the north by Sa’a and Monatele, west by Elig-Mfomo, south by Okola, and east by Batshenga, soa, and Edzendouan, and the community accumulates an altitude of about 900m, which is on Mount Loua.

The community of Obala subdivision covers a surface area of about 475 km2, 25% of which is in the urban peripheries and 75% in the rural zone, with a population of 29054 (in 2005), 32888 (in 2012), and recent data estimates the population to be 133014, with an average of 263 inhabitants per square kilometre.



Source: Modified from NIC by Mbukwe 2021

Figure 1: Location of the study area

0.3- Importance of the study

The importance of the study is based on the topic of urban spatial expansion and its effects on the socioeconomic developmental situation of an area. Considering the fact that the phenomenon also takes place in other places in the world, our preoccupation is based on Obala town in Obala subdivision.

0.3.1- Personal importance

As a student entering into Master 2, there is a need to carry out personal research, which will be one way to obtain our degree and will introduce us to the world of research. Not forgetting the fact that the University of Yaounde 1 is oriented toward research diversification. Working in the Obala sub-division on the topic "urban spatial expansion and socio-economic development of Obala subdivision" is to improve my intellect knowledge and to have a good understanding of the phenomenon of urban spatial expansion in the world, Africa, Cameroon, and Obala town. Taking the fact that the phenomenon does not take place in the same urban areas in developed and developing countries.

0.3.2- Scientific importance

Scientifically, to find out the contrast and similarities between the phenomenon of urban spatial expansion in different parts of the world and compare them to our study area. After reading and researching the phenomenon's causes and effects on places in the world, the decision to work on it was primordial. Also, the work is going to serve as a scientific guide to the taking of decisions by the different actors in society as a whole. So, with the aim of adding a plus to the past research work already done by great researchers and geographers in particular, all over the world, four in particular, Conner and Cameroon.

0.3.3- Subdivision importance

The reason that work is being carried out in the Obala subdivision is to help the municipal council and the local area to know the urban spatial expansion rate of their subdivision. Generally, a change in an area is accompanied by both positive and negative effects, so the research will try to find a solution to the negative effects and, on the same line, try to help the local authorities and the council on how to manage them.

0.4- Statement of the research problem

Cameroon has witnessed a rapid increase in population over the past years. The increase population has influence both the rate of spatial expansion and the socio-economic development of the town.

Obala, with a population of 32,888 (2012), (PCD "plan communal de développement d'Obala" 2013) and today ranging between 35, 000 and 50, 000 inhabitants, experiences a persistent increase in the population. This population depends on the presence of one district hospital. The Obala sub-division has experienced a persistent increase in the population over the past years due to migration and rapid population growth. This increase in population leads to the demand for land for settlement, which is not usually easy to get. As a result, most of the inhabitants relocate to the peripheries, thus leading to the creation of new built-up areas with difficulties in accessibility and movement in and out. It is observed that, more people move into Obala than they go out and increasingly come to settle in the area in the long run.

The increase in population as a result of migration from surrounding villages to the town over the past years has provoked urban disorder as more people are found without electricity supply. This enables inhabitants to be in the dark for days and even weeks. The town is rapidly increasing in built-up areas, especially at the peripheries of the town, with the absence of concern from local authorities and council authorities responsible for town planning. This has caused an anarchical settlement in the town. Town planning norms are not respected. Spatial expansion has encouraged resettlement in the peripheries, which has problems with water supply. The water and electricity supply is not only a problem but has become a threat to the health of the people and to the goods of traders. Other infrastructural development such as housing and school have emerged in an unplanned manner. These problems and more raise the following questions:

0.5- The research question

This work is divided into one main research question and three specific questions.

0.5.1- Main research question

In what ways has urban spatial expansion influenced the socio-economic development of Obala sub-division?

0.5.2- Specific research questions

1- How has the Obala sub-division expanded over the past thirty years?
2- What are the factors responsible for the expansion of the Obala sub-division?
3- How has the expansion affected the socio-economic development of the town?
4- Are they any constraints of urban spatial expansion to the socio-economic development of Obala sub-division?

0.6- The research objectives

This work is divided into one main research objective and three specific objectives.

0.6.1- Main research objective

The main objective of this research is to show that urban spatial expansion has influenced the socio-economic development of Obala sub-division.

0.6.2- Specific research objectives

The specific research objectives are to;

1- Determine the rate of urban expansion in the Obala sub-division.
2- Identify the factors responsible for the expansion of Obala sub-division.
3- Show the influence of urban expansion on socio-economic development of Obala.
4- To show that urban spatial expansion has some constraints in the socio-economic development of Obala sub-division.

0.7- The research hypotheses

This work is divided into one main research hypothesis and three specific hypotheses.

0.7.1- Main research hypothesis

The Socio-economic development of Obala sub-division has been influenced by urban spatial expansion.

0.7.2- Specific research hypotheses

1- The rate of urban expansion of the Obala sub-division is rapid.
2- Population growth and in-migration are responsible for the expansion of the Obala sub-division.

3- Spatial expansion has greatly influenced socio-economic development of the Obala sub-division.
4- Urban spatial expansion has caused unplanned settlement and land tenue conflict in the Obala sub-division.

0.8- Literature review

This section contains pieces that were used to help guide this article. Taking into account that the research is based on the urban spatial expansion of the Obala subdivision and the socioeconomic development situation of the area, the sectors involved in socioeconomic development, that is, health and education, are indispensable for human wellbeing. They are considered basic needs, which are necessary for each population. If well managed and taken care of, these needs boost the socioeconomic development of an area due to the advantages they provide. On the other hand, every area in the world, Africa included, particularly Cameroon and Obala, witnessing development in any sector always needs to make sure to check their level of sustainable development too. It is important to consult and organize past work that has been carried out in relation to the research topic, so as to look for the factors, actors, and effects produced or taking place in the study area when the phenomenon of urban spatial expansion takes place.

We decided to consult the first work at our disposal to focus on our study area, which was the work of Matchebou (1986). For her, the town has been witnessing a modifying order in its economic, spatial, and demography sectors. Also, she focuses on the development of the urban area (Obala Town) in the Obala subdivision, which is our same zone of interest. She studied the evolution of the town from the 1950s to 1986. During this period, she notices the rapid increase in the population of the town and the rapid increase in built-up areas caused by factors like infrastructural development, administrative dynamic, and some natural factors like relief, topography, and river availability. On the same line, she notices events that she thinks favour the town's expansion, but some of them are also affecting the expansion rate. Like the river, the administrative dynamics. Given that our research began in 1986, the goal of our research is to confirm the authors' point while also investigating whether these factors still play a role in the rate of urban spatial expansion today.

Also still on Obala, Matcheubou (1986) in her work comes up with the result that the urban spatial expansion of the Obala subdivision was rapid from 1956 to 1986 due to factors

like migration, the change in administrative status and physical factors like relief nature and topography.

0.8.1- Urban spatial expansion and influence to cities.

Urban spatial expansion is a world-wide phenomenon, but it’s happening may not be the same in all world regions. According to Li Xinhu et al. (2011), the expansion of urban areas is due to urban developmental strategies put in place. Their 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. They involve the change in administrative status of a region, industry distribution, transport infrastructure development, and population distribution of the area. On the other hand, Gianni et al. (2019) focus their work on European cities, and their piece of work comes out with the result that most European cities' urban spatial expansion was as a result of the decline in employment and population density from the city centre to the peripheries of the cities.

In Patrick et al. (2012), we see the demonstration of urban spatial expansion on urban land in Kumasi. The authors in their work describe the loss of urban land due to the rapid metropolization of the town due to factors like congestion and the conversion of peri-urban land into residential use. Without ancillary infrastructure and social services. When an area has experienced morphological changes in the physical environment, such as a rapid increase in the creation of built-up areas, an urban expansion is on the way. Ayele et al. (2017). For the author, Gaston (2014), his work reveals that most towns situated beside big cities are also affected by changes in those cities. The town of Soa, situated some few kilometres away from Yaounde's expansion, has been attributed to some mutation caused by the Yaounde metropolisation. From his idea, the need for land by the inhabitants, the migrants, and the state plans for the development of the region act as elements or factors that cause the zone's expansion.

According to Zhifeng et al. (2012), after conducting a study on China's urban expansion, the work's conclusion demonstrates that due to the rapid increase in the industrialization level of China, which influenced the socio-economic statistics, the increase in the GDP (gross domestic product) and the increase in the population contributed highly to the Chinese economy. In the same line, Sudhir (2018), in analysing urban spatial expansion, notices that the phenomenon is characterized by unplanned development. When he planned, he brought up the point that urban expansion is caused by rapid urbanization and uneven and regional disparities in development.

The work of Yehua (2018) reveals that urban expansion is an influential phenomenon in the development of an area. The author in his work showed that population growth is one of the factors greatly influencing the expansion of an area. According to Yieying et al. (2005), after conducting research in Shijiazhuang, China, the population, along with other factors such as traffic conditions, industrialization, and policies, influences urban expansion. According to Mundia et al. (2005), after his different analyses carried out with remote sensing, he proposed that topography, geology, soil, economic growth, and proximity to transportation are factors also influencing urban expansion.

Though not on the same point of view, Erraougui et al. (2021) work on the verification of factors responsible for the rapid urban expansion. They came up with the idea that the geographical position of a town along a main road leads to rapid urban spatial expansion. Taking the point that the Obala subdivision is situated on the national road number 1, which links the northern part and the southern part of Cameroon.

Due to the resemblance between the phenomenon of urban sprawl and urban spatial expansion, there is a need to consult on urban sprawl.

Haregewoin (2000) held that population growth is the main cause of urban sprawl. He argued that the global population has doubled over the past 40 years, with a remarkable shift in global population distribution from rural areas to rural areas. Africa has experienced the fastest population growth, and Asia has become the most populous region in the world. The situation in the study area can be attributed to the fast increase of its population during recent years due to the rural exodus and migration from the neighbouring localities and other smaller towns.

Bruegmann (2005) held that in the USA, sprawl has remained a point of focus in recent years, with researchers citing the automobile, government single-zoning laws, accessible montages, and housing subsidies as necessary indicators of the present day version of the phenomenon. Fulton, W. (1996) adds that as incomes rise and community costs fall in cities across the United States, an increasing number of people are moving to the suburbs.In this sense, urban sprawl in American cities is due to suburbanisation and the spontaneous phenomenon that most city dwellers look forward to a high-quality living environment.

In the developing countries, Menon (2001) argued that urban sprawl is mostly a result of necessity as people move to the city in search of better employment and opportunities. People could be driven out of their farmlands into cities for reasons such as bad weather conditions, poor harvests, or simply because they did not have a means of income. An increasing urban

population led to an increase in size well beyond the limits of the cities. When the cities are not expanding, people are forced to live in informal settlements with increased congestion and density, which leads to "higher number of people per household and no basic services".

Suinyuy and Xiong (2015) argued that sprawl in Cameroon is caused by inadequate policy implementation, outdated master plans, insufficient information, disparity in resource distribution among the different regions of the state and the gaps expounded by traditional management. The ideas of Suinyuy and Xiong are greatly adapted to the study area as the outdated master plan, inadequate policy implementation, insufficient information, and traditional land management are greatly responsible for the phenomenon of sprawl in the area.

According to Jan (2000), urban sprawl refers to the excessive spatial growth of cities. To him trying to understand expansion of cities is necessary to understand too urban sprawl. He pointed out that urban spatial expansion of cities is controlled by three main force which are growing population, rising income, and falling community cost. Same line Sudhir (2018) brought up the points that, urban sprawl is a phenomenon cause by the rapid increase in population, unplanned, un-organisation, and haphazard urban development in the world, and developing countries are not left out. He did emphasize that the influence of this factors are due to some factors like rapid urbanisation, migration, population increase, and rapid economic growth.

Talking about urban sprawl similar phenomenon like urban spatial expansion after a visualisation of the causes, it was necessary to find out work which could show some of its effect. The authors below idea brings out the effect of the phenomenon on the area and on the population in question.

Haregewoin (2005), argued that there are two conflicting ideas about the consequences or effects of urban sprawl. Some people argued that it is harmful and stress on measure that should be taken to combat it while other support and event encourage it. He says those who see sprawl as positive, argued that for countries like America with large areas, there are too vast farmland and open space to worry about how much land is converted. They also stress the primary advantages of sprawl which is decentralisation of employment to the different parts of the cities.

In addition, critics charge that sprawl leads to regional imbalance, such as pulling jobs and people further away from poor communities and increasing inequality. Sprawl also creates segregation of the poor and the rich or social insolation in general. The problem lies not to the

people who have move to the suburbs but rather to the people who have been left behind. The low income groups are abandoned in the downtown because they cannot afford car-based lifestyle. Role of transport technology can explain this social fragmentation. The more congested and deteriorated central town ends up being favourable places for crime and social unrest.

Barnett (2003), held that sprawl leads to increase state, local government and citizen's expenditure. This increase expenditure is through local government programs aimed at protecting the environment or incentive to those affected by natural hazard sprawling areas.

Cobbinah and Amoako (2014) argued that another striking area where the effect of sprawl is felt most is in peri-urban communities. In these peri-urban communities, development is patchy, scattered, and spread out, with the tendency to discontinuity. This is supported by those who describe urban sprawl as a phenomenon characterised by low-density leapfrog development, concentration of population and economic activities in peri-urban areas, and segregation of land use. They added that another effect of urban sprawl on peri-urban areas is the loss of the traditional livelihood in agriculture of peri-urban dwellers resulting from competition for peri-urban land use due to the rapid expansion of the city. The result of the urban sprawl phenomenon is the engagement of peri-urban dwellers in urbanized, less profitable economic activities such as petty trading, commercial and other related livelihood activities. Peri-urban areas continue to experience significant physical and socio-economic changes as cities continue to sprawl. Notably, among these changes is an increase in land value. As land prices rise, poor people are priced out of even the least desirable areas by middle and high-income earners. The poorest are often forced into temporary settlements. Urban land is thus managed by market force, and peri-urban land is lost to the more preferred urban activities ahead of planning.

The ideas of the different authors on the consequences of urban sprawl set the basis for the investigation of urban spatial expansion and its effect on the Obala sub-division. It helps us compare the effects taking place in Obala with other areas in the world where the same phenomenon is taking place.

The following work, I read, was to look for the assuming factors responsible for the phenomenon. Concerning our research work, we will check if the factors cited by the different authors are the same ones involved in the study area in question and also see if, apart from them, there are other factors involved.

0.8.2- Urban spatial expansion and socio-economic development.

Most towns' low level of development is due to the fact that they lack the present pull factors to hold back their population. If a town advances in its industrial level, there will be a change in its developmental status in most of its sectors (Renz, 2020). Margaria et al. (2013). The author of the article tries to examine and identify the indications of small town life. To them, small town socio-economic development is important because, at that time, the development of a region is based on the social and economic level of its town. Most regions are the centres of location of industrial enterprises, transport and distribution centres, research centres, and educational, medical, and cultural institutions. Therefore, small towns are the specific points of growth and development in territories. In Ute Lehrer's (2009) work, the author bases his work in the town of Toronto, Canada, intending to examine the effect of gentrification and condominium development on the socio-economic development of the town. Those factors caused the development of three quarters, which divided the population into three groups: the rich, moderately rich, and poor. This hinders the socio-economic development level of Toronto.

The idea of James et al. (2009), considering urban spatial as one which is associated with economic activities, is obvious for it to change. Urban space expansion and changes are being influenced by the need to develop areas within urban areas for people to benefit. Still on the economic sector, as said by Luca et al. (2017), organising mega events like the Olympics games calls for more investment in development, which, in the end, brings an increase in the economic sector of an area due to the massive pull factors.

The World Bank has shown that an attempt by Nigerians to shift their focus on the economy from the oil industry to other economic activities has been unsuccessful, largely due to corruption, low investment, and a largely unskilled labor force. The education that most Nigerians received was not sufficient; the pupil-teacher ratio was just 37 to 1, and the youth literacy rate was 17% for males and 33% for females up to the late 1990s. Unfortunately, in 2002, 33% of the relevant age group attended secondary schools and only 4% attended high schools. The low number of students in high school can be easily explained by the fact that spending per student in high school is only 29.5% of the GNP. Furthermore, public spending per student on education was only 0.9% of the GNP in 2002 (World Bank, 2004). From this, the only way Nigeria could increase the growth rate in other sectors of the economy was through educational development. The fundamental importance of education is thus widely regarded as

the most direct avenue to rescuing a significant number of people from poverty, as there are likely to be more employment opportunities and higher wages for skilled labour. Carrying out remote sensing and analyses,

Wenze et al. (2012) came up with some main institutional factors. To them, the role of the government, the multi-level urban planning system, land market reform, and economic restructuring are the factors having the greatest influence on urban spatial expansion, which in turn affects the socioeconomic development and sustainable development of some places in the world. Their study was done in the town of Shanghai (China).

Infrastructural developments are factors really influencing the socio-economic development of many towns and cities world-wide. Some authors reveal some pieces of work on the relationship between infrastructural development and socio-economic development.

The notion of development is related to the past western concepts of imperialism and colonialism, and in that period it implied infrastructure development, political power, and economic policy, serving imperialists as an excellent tool for marginalization and diminishing the power of certain countries (Tangi, 2005).

Theoretical and empirical evidence have been produced to show the impact of public investment on infrastructural development, and these studies generally show a positive relationship between the variables, that is, infrastructural to socioeconomic development. According to Arrow and Kurz (1970), they showed that an increase in the stock of public capital investment driven off course by infrastructural improvement can lead to a steady growth rate of 2 per capita with a permanent growth effect. Supported by Barro (1990, 1991), and Barro and Sala-Martin (1992), cited in the work of Norman V. Loayza, sponsored by the World Bank in 2010. Calderon and Serven (2008), linking public investment to infrastructure and growth, employ the fact that the stock and quality of infrastructure are positively and significantly related to per capita growth in GDP.

Mody (1997) suggests that in any modern society, infrastructure plays a pivotal, often decisive, role in determining the overall productivity and development of a country's economy as well as the quality of life of its citizens. According to him, infrastructure can be defined as facilities that provide societies with the services necessary to conduct daily life and engage in productive activities. On the other hand, according to their work, infrastructure has three main impacts. They describe how infrastructure has not only a visible effect on the environment but

also a direct impact on welfare (by time and cost-saving, increased safety, and information network development).

Njikam (1996) argues that infrastructure is one instrument to improve the development of a region. It can influence, in a direct or indirect way, socio-economic activities and other regional as well as production factors. The author stresses that infrastructure policy is a conditional policy for regional development; it does not guarantee regional competitiveness, but it creates necessary conditions for the achievement of regional socio-economic development. Martinkus and Lukasevicius (2008) argued that infrastructure service and physical infrastructure service are factors which influence the investment environment on a local level and increase its attractiveness.

Almed and Hossain (1990) research on the impact of marketing infrastructure on agriculture found that road quality increases the use of fertiliser and enhances total agricultural output. In the same perspective, Omamo (1998) also confirms the fact that inadequate infrastructure results in low technology adoption, cropping choice, and low agricultural productivity in developing countries.

According to Mattoon (2004), who contends that infrastructure investment can stimulate organizational and management change, the construction of a railway system results in standardized schedules that provide economic benefit beyond the rail itself. In the same sense (Aschauer et al. 2006, cited by Neba 2012), points out that the delivery of services like water, sanitation, transportation, and energy directly benefits households and can dramatically improve their welfare and contribute to their productivity. The author went further to say that infrastructure through services lowers the production cost (transport and communication services), expands market opportunities, which positively affects competitiveness and production, and has led to socio-economic growth. Similarly, the goals related to human capital development (education and health) rely on services that require supportive infrastructure, such as water and sanitation, to prevent diseases. There is electricity to serve schools and health clinics, and roads to access them.

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Infrastructure is one of the tools available to help a region's development.It can influence, in a direct or indirect way, socio-economic activities and other regional as well as production factors. The author stresses that infrastructure policy is a conditional policy for regional development; it does not guarantee regional competitiveness, but it creates necessary conditions for the achievement of regional socio-economic development. (Njikam 1996, cited by Neba 2012).

Miltten (1999) attempted to understand the level of influence of infrastructure on the prices of agricultural produce in Madagascar. Since changes in the price of food grains do impact the welfare of individuals through alteration of consumption, the study investigates whether the presence of infrastructure often determines the price level of after-market liberalisation as transport cost, whether the difference is due to distance and quality of infrastructure, and whether infrastructure influences how the cost of liberalisation is shared between producers and other economic agents, that is, transporters, middle men, and consumers. The study found that infrastructure is an important determinant of price levels. Price levels decrease significantly as the distance to the main road increases.

Fazil (2014) argues that, to him, social chances and social structure are prior to the economic and social development of an area. To him, the industrial revolution that took place in Europe in the 18th century brought attention to the fact that industrialization was the mainstay of development. Today, in his work, he puts manpower as another element in the development of an area. With his saying, we take into account that the labour force is an important factor in the development of an area. Following the idea of Luca et al. (2017), the urban spatial expansion of an urban area is one which is highly influenced by the development of infrastructure. Following his research work in Athens, Greece, urban expansion was possible thanks to the development of many infrastructures for the upcoming Olympics games.

The above few articles and revues consulted based on development need to be clear on the assuming factors responsible for the development of an area. The purpose of the research will be to verify the development situation of the study area by putting forward the factors responsible for its development and trying to verify if these factors are all the same in different

parts of the country. There is a need to verify if the study area's development is caused by other factors that are different from those mentioned in the different articles and past revues consulted.

0.8.3- Actors and influence in the development of the town.

Actors' interventions, though at times, are not taken into consideration in different activities, as they are important factors to be considered in most situations and happenings due to the role they play. Some authors produced pieces of work to argue about the potential of actors in different activities.

According to Cheka (2000), diverse actors are involved in the process of local development. These include actors such as the council, FEICOM, municipalities, civil society organisations, and international institutions. Through the author's work, we identify actors involved in socio-economic development and expansion of regions. In the research work, we need to verify if the following actors are present in the study area, examine the idea that actors present are those pointed out by the article author, and look away from the theme to see if there could be any.

Tina Wallace (2000), Development and Management, looks at NGOs in her study of development management and the aid chain as key players in the development process. She sees non-governmental organizations (NGOs) as outspoken players who criticize the work of others while also promoting their own perspectives on food development practice.The main objective of the study is to critically explore the extent to which the values and practices they espouse are manifest in development practice. Though the study does not show the role of local actors in social and economic development, it gives an understanding of NGOs as local actors responsible for development. Hence, this research will show the role local actors play in the socio-economic development of a region, thereby solving a theoretical gap.

Trying to talk about expansion and development without involving the actors is difficult without having a concrete result at the end. Because actors are key agents when working on such a phenomenon, it was critical to verify and consult previous work related to actors. So here we are interested in knowing the actors involved in the study area and the different roles they play.

0.8.4- Factors and urban spatial expansion

Most of the phenomena taking place in any part of the world are generated by some factors, and the case of the urban spatial expansion of Obala subdivision is not different. From past research, we had to find out if urban spatial expansion is influenced by external factors and, if so, which factors are some of them. We succeeded in getting some according to the different authors' works.

The increase in built-up areas is generally related to population growth, since population growth is a major driver for built-up area expansion. A comparison of the growth rates of the population and built-up areas helps analyse the characteristics of urban growth. Bhatta (2009) showed that urban sprawl can be identified by a careful assessment of changes in built-up area expansion and population growth. The land consumption rate (LCR), which was used as an index to measure the progressive spatial expansion of the city vis-à-vis its population, was computed by using Equation (Sharma, Pandey, and Nathawat 2012). For the author, land consumption is a factor in the fast urban spatial expansion of an area. On the same note, projecting future built-up area demand is important to assess urban dynamics so that timely action can be taken to minimize the subsequent impacts. However, accurate projection is a challenge because of the complexity of related socioeconomic factors (He et al. 2008). Taking population growth as a major driving force for urban expansion, population size can be used to estimate the built-up area or vice versa. Recent studies by He et al. (2008) and Haregeweyn et al. (2012) demonstrate that linear regression of built-up area and population can be used to project future built-up area demand.

0.8.5- Sustainable development and Expansion

Taking into account that our work is based on town expansion in relation to socioeconomic development, this usually involves the mass and over-exploitation of natural resources, which are also important for the future generation. So, it is necessary for us to consult articles on sustainability to check if the development of Obala subdivision is developing sustainably. In the world today, most countries are now looking for ways to develop sustainably so as to secure natural resources for future generations. Africa, Cameroon, and the Obala subdivision are not left out.

Sharpley (2000) suggests that development and sustainability could be in juxtaposition, where both could have possible counterproductive effects, while neoclassical economists

emphasize that there is no contradiction between sustainability and development (Lele, 1991). Sachs (2010) also suggests that there is no development without sustainability or sustainability without development.

Scott et al (2016) brought the point that, to achieve the level of sustainable development desired by most nations, infrastructure development must be improved. For these researchers, infrastructure development like telecommunication and social amenities like water and electricity are very important for sustainable development.

According to Daniel et al. (2008), after carrying out research on sustainable development, they came to the conclusion that for the measurement of sustainable development indicators, the best indicator is the HDI (human development index). On the same note, based on the measurement of sustainable development in an area, Robert et al. (2016) demonstrate that the wellbeing index, ecological footprint, and development indicators are best used to measure sustainable development.

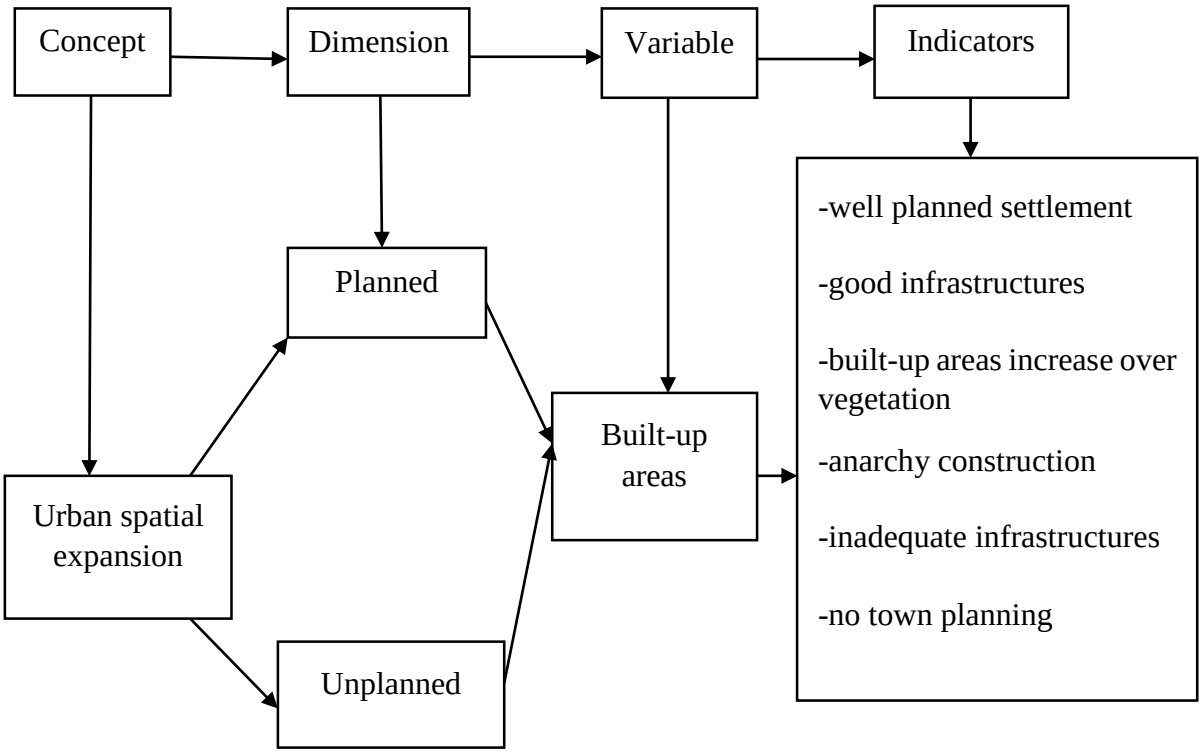
0.9- Conceptualisation and theoretical framework

0.9.1- Conceptualisation

This part of the work focuses on the related literature based on the concept of various terms in use. The concepts are urban spatial expansion and socio-economic development.

0.9.1.1- The concept of Urban Spatial Expansion

Spatial expansion is seen as the increase in the occupation of surface in a territory with an increase in the number of infrastructures and other commodities. The concept of spatial expansion is a result of the interaction between urban development and the physical environment. Following these authors' ideas, when there is a development action such as the creation of new built-up areas with an increase in infrastructural construction, spatial expansion takes place (Li Xinhu et al. 2011). The increase in the creation of new built-up areas characterizes the aspect of spatial expansion. Gianni et al. (2019). Following the view of the concept, Obala is experiencing such a change. The surface area of Obala has recently changed with the construction of new infrastructure, such as the creation of new quarters accompanied by the implantation of new houses, thus leading to an increase in the occupation of the land.

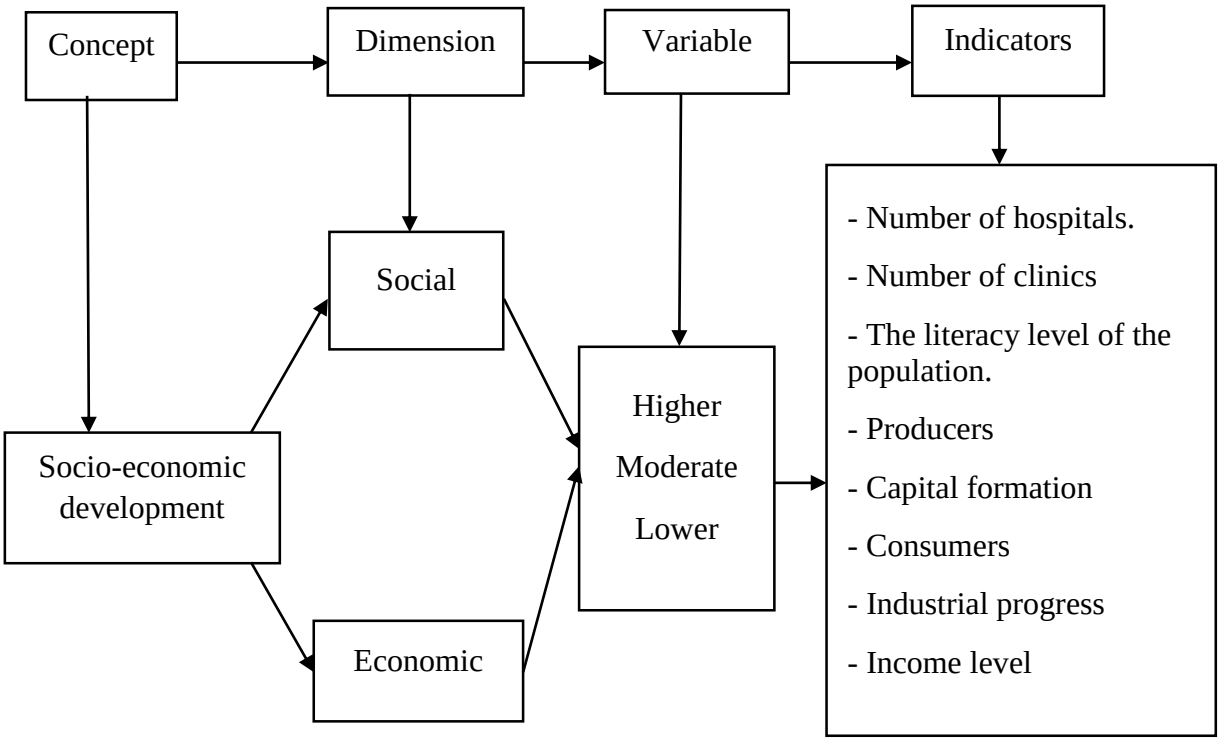


Source: Author's conception 2021

Figure 2: The conceptualisation of urban spatial expansion in Obala sub-division

0.9.1.2- The concept of Socio-economic development

Socio-economic development is the process of social and economic development in a society. Socio-economic development is measured with indicators such as GDP (gross domestic product), life expectancy, literacy, and the level of employment. Changes in less tangible factors such as personal dignity, societal freedom, personal safety and freedom from fear of physical harm, and the extent of participation in civil society are also considered (environmental data achievement 2013).



Source: Author's conception 2021

Figure 3: Conceptualisation of socio-economic development situation in the Obala sub-division

0.9.2- Theoretical framework

0.9.2.1- Theory of socio-spatial re-composition by Guy Di Meo 1985

The theory states that for the perspective of landscaping and development to be functional, parameters need to be taken into consideration. The author centres his theory in the geographical domain and pauses a number of questions by precising that if they are answered, the look will be different toward socio-spatial re-composition. The one which is attractive and related to the research topic is that of "do they exist and interrelate between space and society, and the interrelationship between social, geo-economic infrastructure and political superstructures?". A number of hypotheses are advanced:

- In a giving territories, social skills of all actors do not belong to the same intermediate.
- Each place has it preponderant way it acts to those who pass through the economic sphere.

The concept of socio-spatial re-composition implies that collective identities refer to a minimum spatial contiguity of a territory. The theory on which we are working doesn't exclude the fact that all individuals or groups belong to one and the same socio-spatial re-composition. The principle of belonging multiples the reference for a territory separated by a less large geographical discontinuity.

The theory helps in the research topic to show that a territory's spatial expansion based on geographical observation is not affected by one factor but a number of parameters are taken into account. Obala is an area characterized by a high number of migrants from different origins, different social lifestyles, and speaking different languages cohabitating together. The theory also helps in the research work in that it establishes a link between expansion and the social aspect of relationships among the population of a particular area.

0.9.2.2- The theory of economic development by Schumpeter 1934

According to Schumpeter, the entrepreneur is at the centre of the economic development of an area. For him, there are certain forms of innovation and changes that an entrepreneur must make for the process to take place. The innovation includes

- Production of new goods that were not known to the consumers, or producing the same goods with a new quality.
- Introducing new unknown method of manufacture or sale.
- Open a new market or a good breakthrough on the market that did not have access to such goods.
- Gaining new sources of raw materials or semi-finished products.
- Introducing a new organization either by creating a monopoly or by breaking an existing monopoly situation.

Schumpeter emphasizes that those entrepreneurs who will be able to introduce some of the mentioned innovations will achieve high profits. Those people will be the most daring, dynamic, and energetic, exposing themselves to the possible risk. At that point, other entrepreneurs are going to join them, and thus begins the process of extracting the economy from a state of economic circular motion. At that point, business dynamics will begin. The changes include the following:

- Expansion of goods, products.
- Productivity of factors of production such as finance, labour, material.

- Innovation in production such as, technology, process changes and increase in human resource productivity.
- Innovation in marketing area such as the composition of the market, size of the market and new markets.

The theory in relation to our research work and topic helps in that the study is one characterized by a higher population involved in the production of agricultural products. Those entrepreneurs who use it can provide changes to the economic situation of the area.

0.9.2.3- The theory of social development by Vygotsky 2013

The theory tries to explain the elements and how a conclusion can be brought about through social development. To him, social interaction takes place before development. He emphasized the effects of culture and social factors on cognitive development (cognitive development, which is referred to as how a person perceives, thinks, and gains an understanding of his or her world through the interaction of genetic and learned factors): language, culture, skills, and value. The author comes up with the assumption that:

- Culture is significant in learning
- Language is the root to culture
- That individual learns and development within their role in the community.

This theory shows the need for language learning. This theory will help to elaborate on the fact that it is the mastery of other languages by the inhabitants of the study area that has contributed to the expansion of the zone in relation to its socio-economic development.

0.10- Methodology of the research

This part of the research work covers the different steps used in order to get access to the relevant information and data that help in the realization of the work. To this effect, for better analyses, we proceeded with a global collection of data using diverse sources of information. The methodology was divided into two parts, namely, the secondary source of data collection and the primary source of data collection.

0.10.1- Data collection and procedure

The data collection for this research work about urban spatial expansion and socio-economic development in the Obala subdivision was done in two parts.

- ❖ Secondary source data was gathered from written sources, libraries, and the internet.
- ❖ Primary source data collection is done from the area of study.

0.10.1.1- Secondary source data collection

The secondary source data collection does not need physical contact with the population (cited population). The aim is to get access to documentation on all the various sources available in our immediate environment and on the internet.

0.10.1.1.1- Documentation

When conceptualising the research topic, we went through a wide variety of past work to document ourselves. It started by visiting the libraries available at our disposal, such as our department library (Department of Geography library), where we got into contact with impressive past work in our study area. Next, we proceed to the other different libraries available on the university campus, such as the main library (the Central library of the University of Yaounde 1, the Faculty of Arts, Letters, and Social Science library (FALSH)), the library of the higher teacher training college (ENS Yaounde), In these different libraries, we found master's theses and PhD works that had research topics closer to our work, such as "The role of local actors in the socio-economic development of Bafut sub-division," which helped us a lot.

This work could not be considered concrete if we had not visited an external library like that of the study area in question. For that, we paid a visit to the municipal council in order to have access to their library. After the deposition of our application to the council, the mayor and his close collaborators granted our application. The library of Obala, though not impressive and one could not consider it as such, allowed us to go archive and work, which contributed more to the mastering of the subdivision (thanks to the chef of technical service, who gave us documents related to the history of the subdivision).

0.10.1.1.2- Electronic research

This is based on internet documentation obtained to gain access to works being done in other parts of the world, specifically Africa, Cameroon, and Obala, that are relevant to our research topic but do not exist in hard copy form in our possession. We visited a variety of sites, such as:

- ❖ Memoireonline.com

- Google scholar
- Wikipedia

On these sites visited, we were able to access impressive work on other subjects apart from those related to our research topic. We also had the chance to get into contact with some others in other countries who have been working on the same phenomenon that has been studied by us. It is true that some consider Wikipedia not really powerful, but thanks to its ability to permit researchers to modify publications done by others, we discover new thoughts on the phenomenon of urban spatial expansion.

0.10.1.2- Primary source date collection

This part deals with the data collection from the field. The steps outlined are those used to have appropriate data that is analysed in the research work.

0.10.1.2.1- Field trip for the observation and collection of data from 03/08/2021 to 08/08/2021

The field observation was divided into periods so as to have the best view of the study area. All work or research carried out by a geography student or researcher is considered the first tool of a geographer. A pre-field observation was also conducted, keeping in mind that the work of a geographer begins with observations on the terrain. After a good observation, we could bring out our steps to follow for the collection of the data.

0.10.1.2.2- The first field trip for the observation on 03/08/2021 to 05/08/2021

The first field observation work was to come into contact with real elements that are visible in the study area to avoid repetition. Another point was to observe the local population's behaviour toward the phenomenon being studied. To have good and clear proof, we mostly visit the peripheral areas (to know if there are new quarters that have been created in the town in the past years) and observe the effect on the physical milieu.

0.10.1.2.3- The second field trip for the collection of data 07/08/2021 to 08/08/2021

The second trip to the field was to deposit an application to the senior divisional office for authorization to carry out our research in his administrative zone. The 2 days of work were to make sure to cover all the households to be questioned and interviewed.

0.10.1.2.4- Interview

0.10.1.2.4.1- Guided interview

In order to have an open view of the terrain, it was necessary to have an interview with the guide and some of the authorities in the area. There was a series of interviews with the Senior Divisional Officer (SDO) of Obala subdivision. The aim was first to have an authorisation for us to carry out our research in his administrative, second to not be disturbed by the forces of law and order, and third to not have resistance from the local population. Another interview was conducted with the mayor and his chef of technical service, with the aim of finding out the developmental level of the subdivision. With authorisation from the SDO and responses from the mayor and his chef of technical service, it was of great importance to the writing of this piece of work.

0.10.1.2.4.2- Free and open interview

A free and open interview was also conducted with the different quarters' heads. The objective of it was to find out from the quarters if, for the past year, there have been changes taking place in their various quarters. During this phase, more attention was given to the interview with the quarter’s head of the peripheries quarters with the aim of analysing the expansion rate in the peripheries.

0.10.1.2.5- Questionnaire administration

The questionnaire consists of one of the important primary sources of data collection in the field. The questionnaire is a series of questions that will be used in the field to acquire more information on the research topic. The questionnaire was subdivided into 4 parts, with each consisting of specific questions to help analyse each chapter.

The first part referred to the question based on the personal information of our targeted population. The point was that, in order for us to have good data at the end, a certain age limit was necessary, as well as knowing how long they had been residing in the subdivision. The second was a specific question related to the urban spatial expansion of the subdivision during the past years. The third, on the relationship between the phenomenon of urban spatial expansion and the socio-economic development situation, and the last part, composed of questions related to the sustainable development of the subdivision. The need for the questionnaire pushed us to the selection of a targeted population in the study area.

0.10.1.2.5.1- Instrument use for the questioning of the targeted population

A set of electronic instruments were used, that is, a cell phone and a table. We inserted our question into the phone and tablet thanks to some application development for research by some impressive researchers and institutions in the world. This application helps us to overcome the problem of time-saving and was good in that our data was collected and directly saved on an external server online and could be collected at any time for treatment and analysis.

0.10.1.2.5.2- Method of questionnaire administration

Taking into consideration that the study area is a French zone and knowing that a high percentage of the population of origin is in the centre region, even though other people from other regions are found there, we translated the questionnaire into French.

In the field, due to our inability to understand the local language of the area, the work needed the services of interpreters to facilitate the collection of data. We explained and showed how to use the application on their table and phone to question the population so as to help administer the questionnaire to the local population who did not understand the French language.

Going into the households, we constituted 4 groups of 2 members each and divided them into the 13 quarters of the town of Obala. Each group was made up of one translator who understood the native language and the other who was filling in the responses given by the household. This methodology was effective so as not to miss any vital information from the household questioned.

0.10.1.2.6- Targeted population

Taking into consideration that our topic focuses on the urban spatial expansion rate of the subdivision and its developmental situation, it was necessary to select households residing in the various quarters of the urban area (town) of the Obala subdivision.

0.10.1.2.7- Sampling

This refers to a method that involves the selection of a sample population from which the study is supposed to be conducted.

0.10.1.2.7.1- Sampling size

The sampling size chosen for our research was that of the households in the various quarters in the town of Obala in the Obala subdivision. The eligibility of the household was defined before going on the field for the administration of the questionnaire, and the set of people were surveyed without any distinction of gender or social class.

We decided to use a proposition of 2% of the house present per quarter. With the implementation of the proposition of 2% 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 has. Taking into account that some quarter's household numbers were much higher than others, it was better to select 2% of each in the other to know which quarter has had changes over the past years.

Using the formula

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

Table 1: Sample size distribution in the Obala sub-division

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: *BUCREP, 3eme RGPH 2005 Répertoire actualise des villages du Cameroun.*

0.10.1.2.7.2- Sampling method

The method used was that of simple random sampling, also known as chance or probability sampling (Blaise Pascal and Pierre 1654). In this method, every unit of the

household per quarter has a chance of being included in the sampling, and each of the possible samples in the case of our research work has the same chance of being selected.

0.10.2- Data processing, treatment, collection and analyses

0.10.2.1-Collection and analyses of data

The collection of data in the field was done with the use of the kobo-collect app. For the analysis and graph generation, there was the use of different software and apps. For the analysis of data collected in the field, the data was analysed using SPSS (a statistical package for the social sciences) and a Microsoft Excel spreadsheet for the production of graphs. Through this technique, the researcher added qualitative explanations to complement the quantitative analyses.

0.10.2.2- Processing of remote sensing data

Processing of the remote sensing data was done with the use of variable software like Qgis version 3.10 and Adobe Illustrator for the conception and production of the various maps of the study area used in the research work. We had to use other apps like Google Earth in order to obtain satellite images of the study area. For the production of maps showing the urbanization progress of the urban zone in the sub-division Cell phones were used to obtain photos used in the research.

0.10.2.3- The treatment of satellite images

Satellite images constitute one of the important sources of data for the cartography of land use and land occupation types in an area. They bring spectral and spatial information, which is more important than most of the other sources of information.

0.10.2.3.1- Landsat images treatment

Getting Landsat satellite images from the American spatial agency (NASA), which evaluates the average altitude at 705km in the orbit circulation around the globe with an inclination of 98.2° (Mbevo opct). In the evaluation of the Obala sub-division's temporal and spatial soil occupation, we chose to work on three multispectral Landsat satellite images, georeferenced with the Qgis application with little cloud cover. The images were downloaded from free internet sites, that is, http://glovis.usgs.gov and http://earthexplorer.usgs.gov. The applications used for the treatment of images are ENVI 5.3 and QGIS 3.10.

0.10.2.3.1.1- ENVI 5.3 application

This ENVI 5.3 application is used for the numerical treatment of the geospatial imagination. We use the application for:

- The radiometric and geometric correction of the images.
- The tape assembly
- The mosaicking
- The extraction of the zone of study
- The satellite images classification
- Our classification evaluation of the images
- Generating the surface area occupation

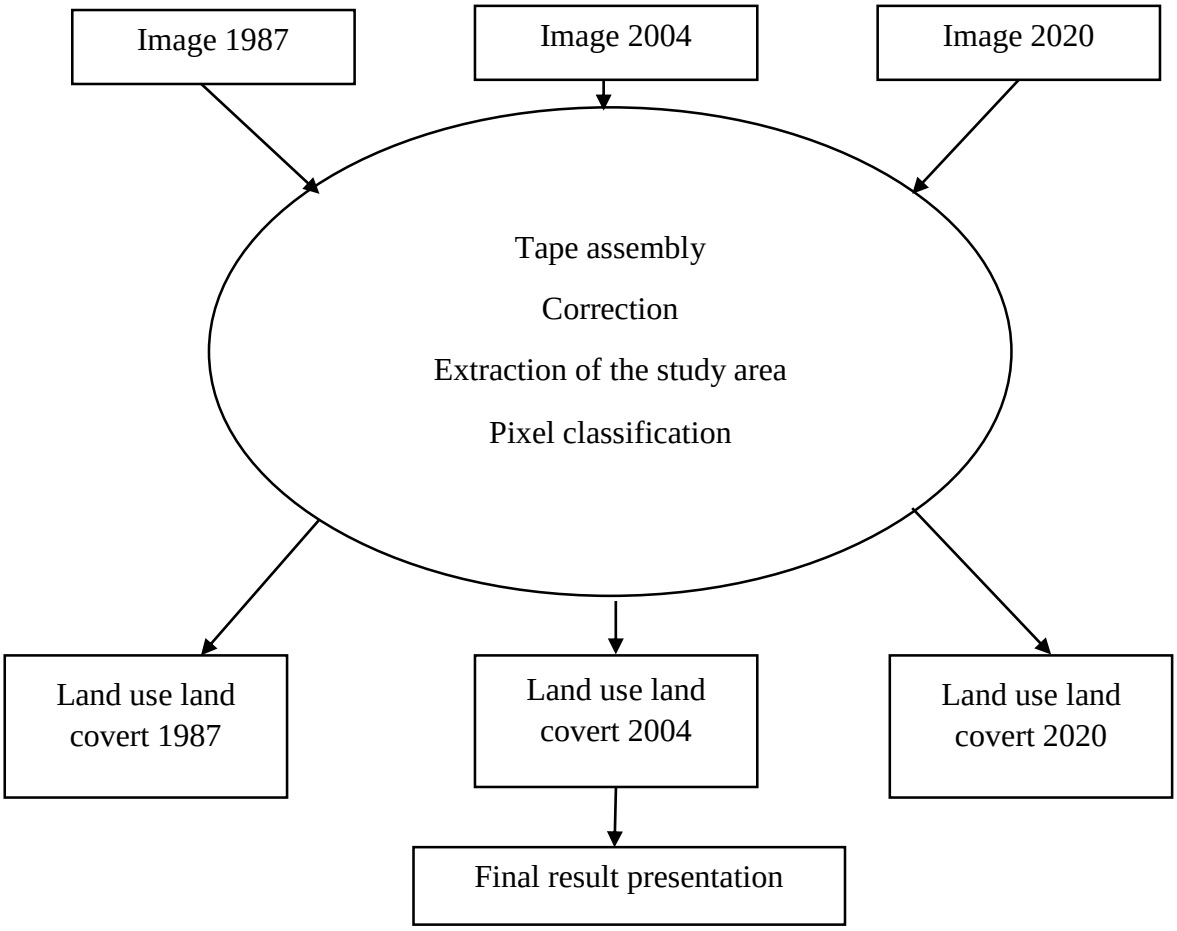
0.10.2.3.1.2- QGIS 3.10 application

The application QGIS 3.10 is one of the GIS (Geographical Information Systems) and is an open-source application open to all. Gary Sherman created it after a series of research projects to address a need in some sectors of activity, such as education and the scientific community, in order to solve and shed light on some problematic issues that had been raised. The application is used in the study to address the following issues:

- The transformation of files (raster to vectors and vice versa)
- The creation and edition of maps
- To detect the transformation on the different satellite images
- The statistical analyses of certain data and the surface area calculation

0.10.2.3.1.3- The diachronic treatment of land use and land cover occupation in the Obala subdivision

Images downloaded with Landsat help in the analysis of the land occupation by the different land uses and land cover of the Obala subdivision during the selected year. That is, 1987, 2004 and 2020, with a resolution of 30m, were used to have good results during the treatment of the images. We also use some satellite images from other sources to compare, so as to avoid a loss of information during the diachronic analyses.



Source: Modified from Mbevo by Mbukwe 2021

Figure 4: The methodology used in the diachronic surface area occupation in Obala

0.10.2.3- Cartographical treatment

Due to the necessity of the conception of maps to be used in the work, there was a need to carry out some cartographical treatment. With the aid of software such as Qgis and ArcGIS, we were able to treat satellite images gotten from various sources (with the use of Google Earth). We downloaded satellite images of the urban zone of the Obala subdivision and produced a cartographical sketch map of the area (production of the urbanisation progress map).

0.10.2.3.1- Topography and hydrographic maps production

It was constructed with the aid of base data from INC (the national institute of cartography). We had to do a screen search on the Cameroon geology in order to extract the zone of interest for us. So as to produce the maps needed for the research work.

0.10.2.3.2- Slop map production

To succeed in the realization of the slop map needed, we make use of SRTM images (shuttle Radar Topographic Mission). With the use of ArcGIS, considering that we had succeeded in getting images from SRTM, we succeeded in the elaboration of the map.

0.10.2.4- GPS survey

The GPS (global positioning system) is a global positioning system by the satellite of any area on the globe. It helps in getting the reel position of an area with the help of coordinates, that is, longitude X, latitude Y, and attitude Z. Getting a position instrument used, such as the GAMIN (receptors), varies in power and capacity. There is a constellation of 31 satellites all around the globe, in an orbit of about 20200km at an altitude of about 11h58min. The satellites are positioned in orbit around the globe in a position that enables all users to have their exact position with no difficulties. The GPS helps in the research by getting the exact position of certain social amities in the study area during the field data collection for the production of maps.

0.11- Difficulties encountered in the field

The difficulties encountered since the beginning of the research were very difficult to overcome. The first was on how to have secondary source data, taking into account that the phenomenon event, though seen in Cameroon as a whole, has not really been done about it.

Documented literature on urban spatial expansion is limited in Cameroon. Very few Cameroonians have carried out research on the topic of urban spatial expansion. The situation of urban expansion still remains far away in the minds of Cameroonians, whereas the urban areas in the country are fast growing in an uncontrolled manner. Most of the literature gotten on urban spatial expansion was information on towns and cities outside of Cameroun. This made it difficult to relate the information gotten from the different sources and countries, especially those in the development world, with that of Obala. However, the information gotten from urban areas of Cameroon set the basis for the findings of this study. The experience of other countries was used to guide the procedure for the collection of primary data. With the primary data collected, the problem of limited documented information for the study was overcome.

The collection of primary source data needed in the field was not an easy task for the researcher who came across problems like those of language, quarter name problems, and the locale population's behaviour.

The identification of quarters was a real issue that could have hampered our research while in the field because the names obtained from the BUCREP 2005 household census were not exactly the same as the inhabitant recognized. For example, the quarter named "Bamiléké Quarter" by the inhabitants and council workers during the survey was not exactly the same as the inhabitant recognized. our first field trip was based on observation and the visit to the council of Obala to get the real names of the different quarters was not successful due to the fact that the council authorities themselves did not know the real names (for example, the quarter named "ELOT 1" by the inhabitants and the council workers). To solve this problem, we had to pay an individual who knew someone who had been in the town since 1980 to date.

The local population, especially the natives of the sub-division, had difficulties communicating with us due to the language barrier. Most of them did not understand French or English, especially the elderly population. So, to get over this problem, the researcher was obliged to pay some individuals to act as translators. Another was based on the quarter's names. Those with whom we had problems were the migrants who came from other regions. We thought it wise to first visit the head of each quarter to make sure we didn't make any mistakes with the quarters while collecting the data.

We also came across problems related to the behaviour of the local population. Most of them were hesitant to answer our questions and provide us with answers because they assumed we worked for the government. They said we were agents sent by the mayor. The fact was that most said the mayor was their mayor and that he was not representing them as he was supposed to do. But thanks to the person who understood our objective after explanation and gave us the answers we needed,

0.12- Structure of the work

0.12.1- General introduction

This part of the work is made up of the background of the study, the location of the study area, the importance of the study, the statement of the problem, the research question, the literature review, conceptualisation and theatrical framework, the research objective, the

research hypotheses, the research method, the synoptic table, the problems encountered in the field, and the structure of the work.

0.13.2- chapters layout

Chapter 1 deals with and focuses on the aspect of the Obala sub-division's spatial expansion by showing the evolution of the phenomenon over the past years to the present date. The purpose of this chapter is to verify and testify to research hypothesis number 1.

Chapter 2 will be demonstrating the elements responsible for the spatial expansion; that is, the factors and actors present in the study area's role played in the spatial expansion of the sub-division. This is to verify Hypothesis number 2.

Chapter 3 explains the effect of spatial expansion on the development situation of the sub-division by demonstrating the various changes and ways in which the development is affected by spatial expansion. This chapter will provide evidence for Hypothesis number 3.

Chapter 4 brings out some of the constraints as the result of the urban spatial expansion of the Obala sub-division. This chapter objectives is to verify the hypothesis number 4.

0.13- The synoptic table

The table below shows a summary of this research specific questions, objectives and hypothesis followed with the methodology to respond to the hypothesis suggested.

Table 2: The synoptic presentation of the work

Specific question	Specific objective	Specific hypotheses	Corresponding chapters	methodology
How has the Obala sub-division expanded for the past thirty three years?	Determine the rate of expansion of the Obala sub-division	The rate of urban expansion of the Obala sub-division is rapid.	**Chapter 1.** Dynamic of urban spatial expansion of Obala sub-division.	Observation, satellite images analyses, data collection and analyses
What are the factors responsible for the expansion of the Obala Sub-division?	Identify the factors responsible for the expansion of Obala sub-division.	Population growth and in-migration are responsible for the expansion of the Obala sub-division.	**Chapter 2.** Factors of rapid urban spatial expansion in the Obala sub-division.	Observation, collected and data analyses, interview,
How has the expansion influence the socio-economic development of the town?	Show the influence of urban spatial expansion on socio-economic development of the town.	Spatial expansion has greatly influenced socio-economic development of the Obala sub-division.	**Chapter 3.** The urban spatial expansion and the socio-economic development of the Obala sub-division.	Interview, data collection and analyses
Are they any constraints of urban spatial expansion to the socio-economic development of Obala sub-division?	To show that urban spatial expansion has some constraints in the socio-economic development of Obala sub-division.	Urban spatial expansion has caused unplanned settlement and land tenure conflict in the Obala sub-division.	**Chapter 4.** Constraints of urban spatial expansion to the socio-economic development of Obala sub-division.	Interview and observations.

Source: Author's conception 2021

CHAPTER 1: DYNAMICS OF URBAN SPATIAL EXPANSION IN OBALA SUBDIVISION

1.1- Introduction

Obala which is a satellite town to the capital city Yaounde, is experiencing some changes. This chapter is to examine the urban spatial expansion of the Obala subdivision over the past 33 years. With the help of satellite images, the use of remote sensing software and GIS to trait images gotten from Google earth explorer. The chapter objective is to verify the hypothesis number one which state that "The rate of expansion of the Obala sub-division for the past years is rapid", this is viewed in the following section.

1.2- The Obala Land use/Land cover evolution from 1987 to 2020

The subdivision of Obala has a surface area of 475 km2 were, 25% been occupied by the urban area and 75% been occupied by the rural area (Obala PCD 2013). Knowing that, land occupation dynamic is a phenomenon which take place in a geographical space, the surface area does not change but its occupation can be increase with involvement of human activities. Taking the case of the Obala subdivision, of recent we have noticed a high increase in the surface area occupation by the different activities. The research work is made to discuss on the dynamic of land use and land cover in the Obala from the year 1987 to 2020.

We are to discuss on the surface area occupation of the Obala subdivision over the past years. The analyses made on the different years was to bring out the percentage of built-up areas, the surface area occupied by forest and the surface area cover by agriculture. On the field, we notice the rapid increase in built-up areas with the occupation of new portion of the forest. Our analyses were based on the following; built-up, forest (adult and young secondary forest), culture, gallery forest and grassy savannah.

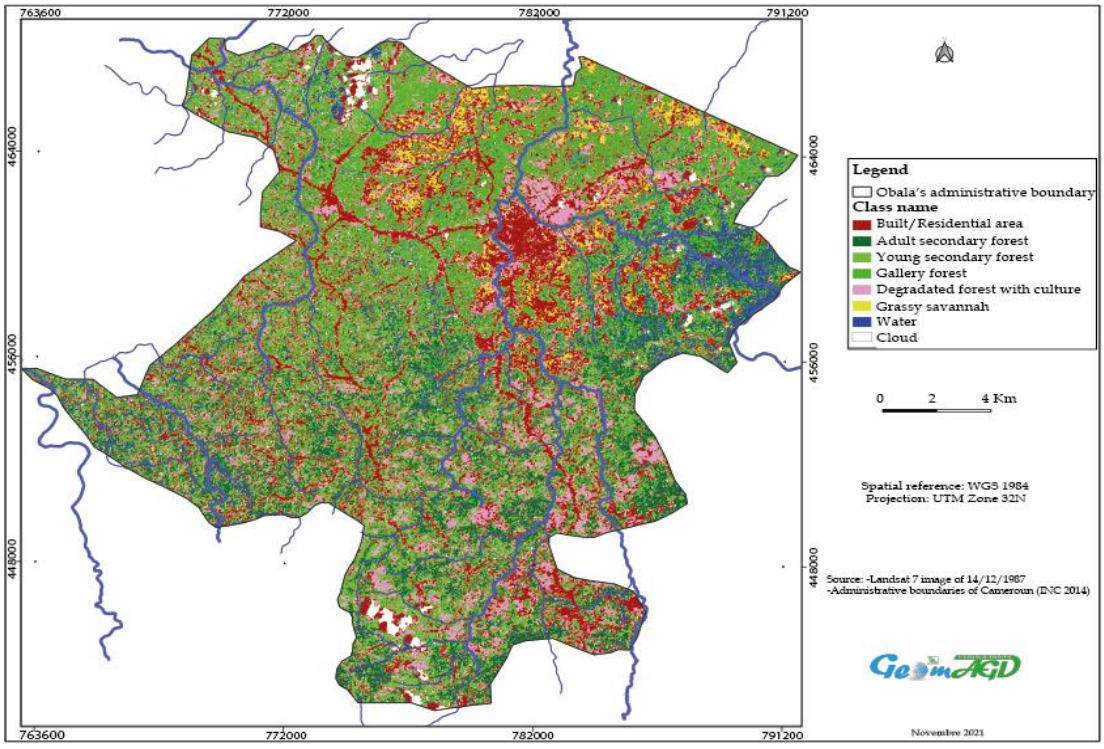
In the year 1987 following result of the analyses made, we noticed that the Obala subdivision during year was dominated by forest (adult secondary forest with 16.38% and young secondary forest with 29.92%). While the built-up area covers only 7.01% of the surface area and 11.64% use for cultural activities like agriculture. Comparing the percentages, it is notice that built-up during the period was not really significant as compare to other activities. This is because during this period the area was not really witnessing the presence of human activities and the fact that Obala was a little town characterised with rural activities like hunting and peasant agriculture. (Table 3)

Table 3: Land use/Land cover occupation in 1987

Surface are occupation	Percentages (%) in 1987
Built/Residential area	7.01
Adult secondary forest	16.38
Young secondary forest	26.92
Gallery forest	25.61
Culture	11.64
Grassy savannah	6.56
Water	5.88
Total	100

Source: Landsat 7 image/NIC, 2014 of Obala

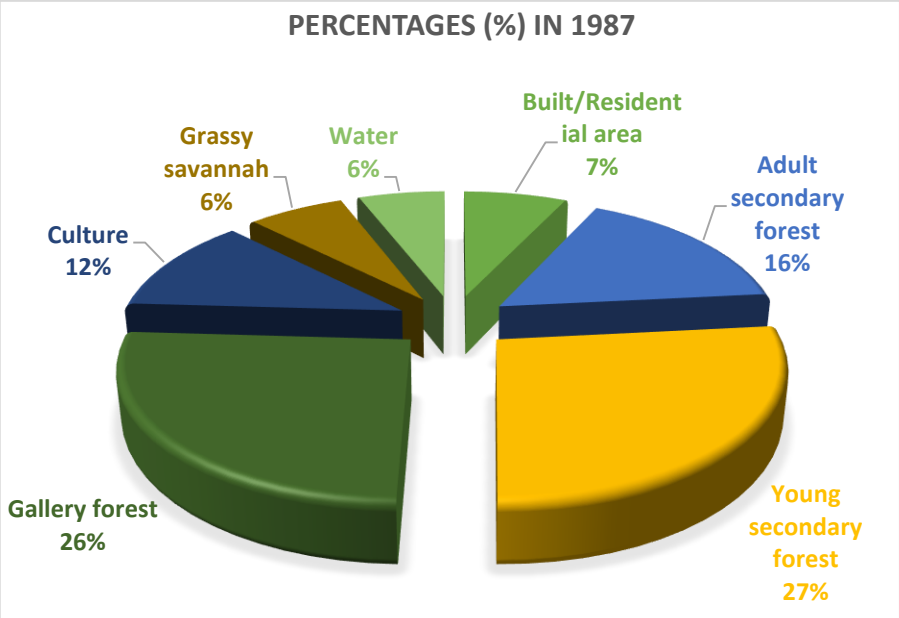
The table above shows the different land use/Land cover occupation during the year 1987. Figure 5 is a remote sensing analyses that was carry to bring out the information in table 3.



Source: Landsat image of 1987

Figure 5: Land use/Land cover of Obala in 1987

The analyses figure above shows the different Land use/Land cover occupation of 1987 with the use of different couloir texture. The figure information is clearly seen in the diagrammatic representation below of the year 1987 Land use/land cover occupation (figure 6).



Source: Field work, 2020

Figure 6: Land use/Land cover percentages occupation in Obala 1987

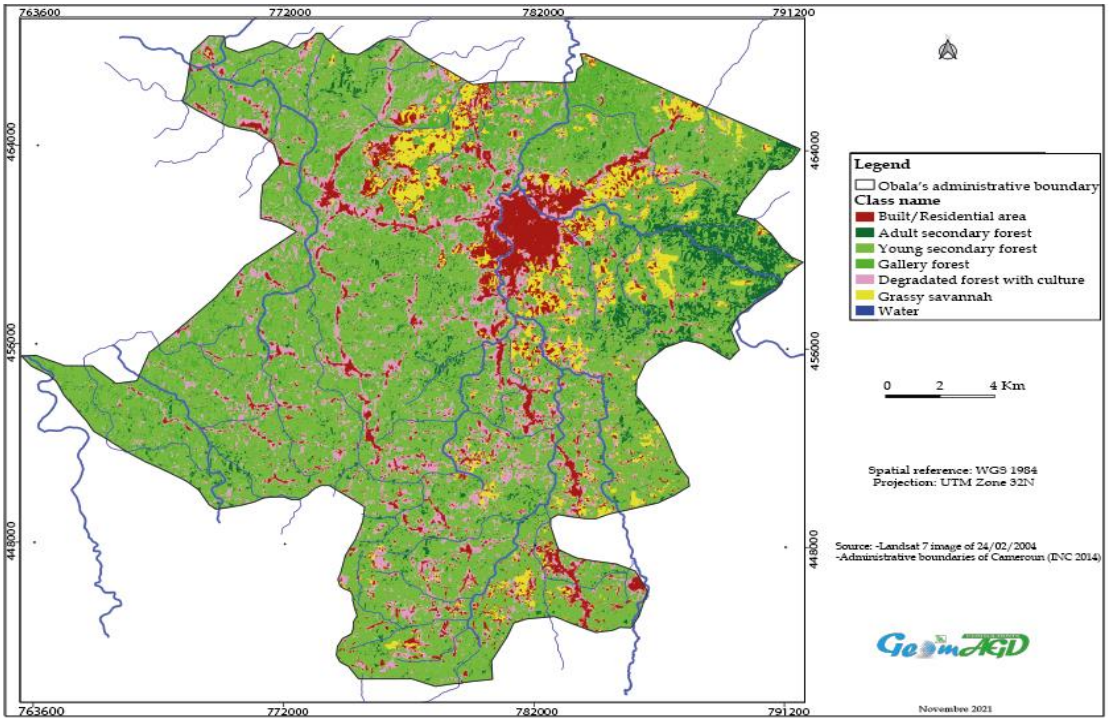
From the year 2004, the case was not really same with slide increase in human activities. The built-up area increases to 9.19% still low as compare to the surface area occupied by forest (adult secondary forest 5.51% and young secondary 57.46) and the area occupied by culture is 13.19%. From these percentages we notice that instead young forest has increase and drastic fall in the adult forest which is giving way. (Table 4)

Table 4: Land use/Land cover occupation in 2004

Surface area occupation	Percentages (%) in 2004
Built/Residential area	9.19
Adult secondary forest	5.51
Young secondary forest	57.46
Gallery forest	8.99
Culture	13.19
Grassy savannah	5.67
Water	
Total	100

Source: Landsat 7 image/NIC, 2014 of Obala

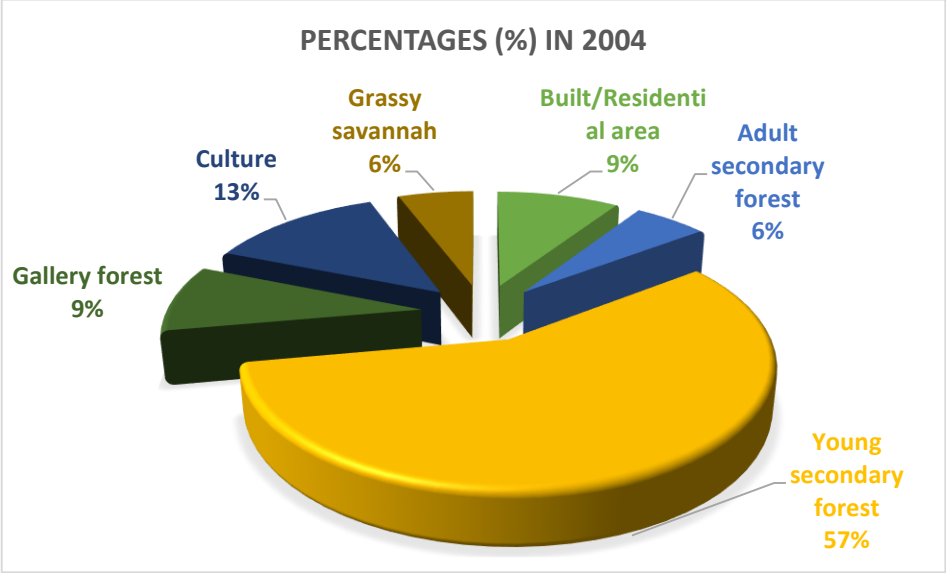
The table above shows the different land use/Land cover occupation during the year 2004. Figure 7 is a remote sensing analyses that was carry to bring out the information in table 4.



Source: Landsat image of 2004

Figure 7: Land use/Land cover of Obala in 2004

The analyses figure show the rate of the different Land use/Land cover occupation of 2004 with the use of different couloir texture. The figure information is clearly seen in the diagrammatic representation below of the year 2004 Land use/land cover occupation (figure 8).



Source: Field work 2020

Figure 8: Land use/Land cover percentage occupation of Obala in 2004

During the year 2020 we observed a rapid change in the surface area occupation dynamic with a high increase in human activities. The increase in the human activities in

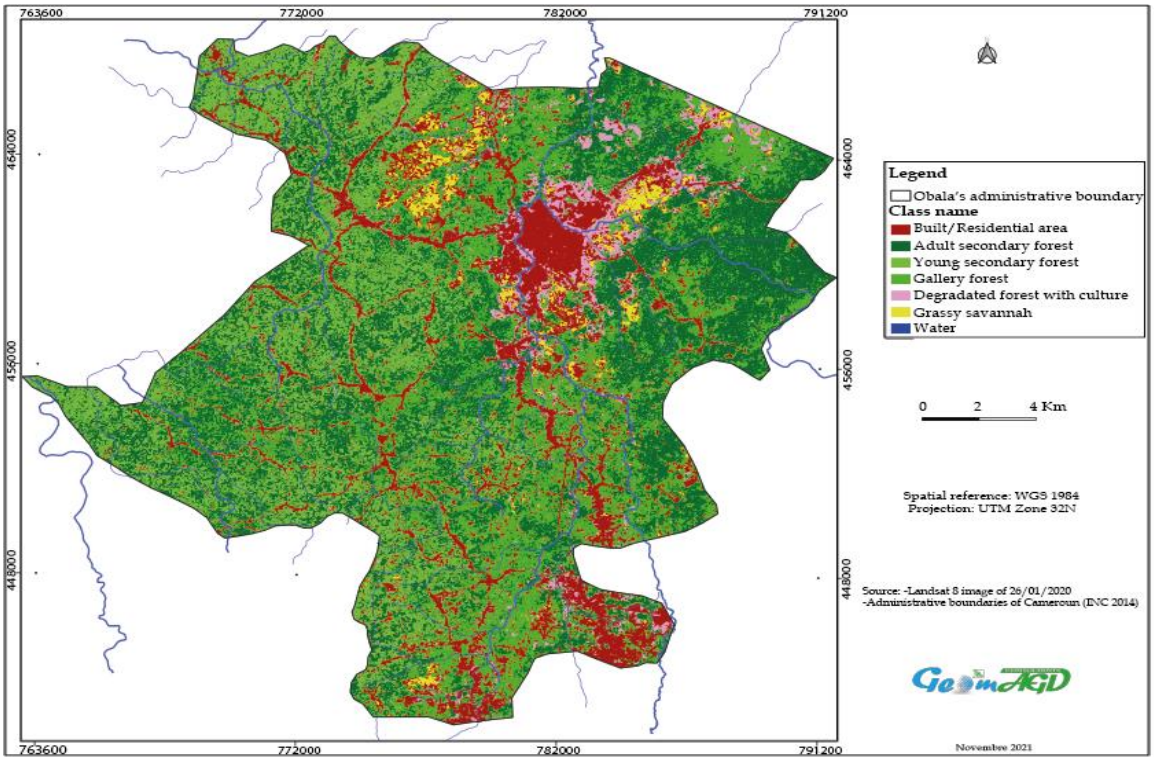
infrastructural development cause the changes in the surface area. The built-up area during 2020 is 16.31% higher than the surface area been occupied by forest (adult secondary forest 4.05% and young secondary forest 1.93%) which has reduced drastically in favour of culture (33.29%). (Table 5).

Table 5: Land use/Land cover occupation in 2020

Surface area occupation	Percentages (%) in 2020
Built/Residential area	16.31
Adult secondary forest	4.05
Young secondary forest	1.93
Gallery forest	20.82
Culture	33.29
Grassy savannah	23.6
Water	
Total	100

Source: Landsat 7 image/NIC, 2014 of Obala

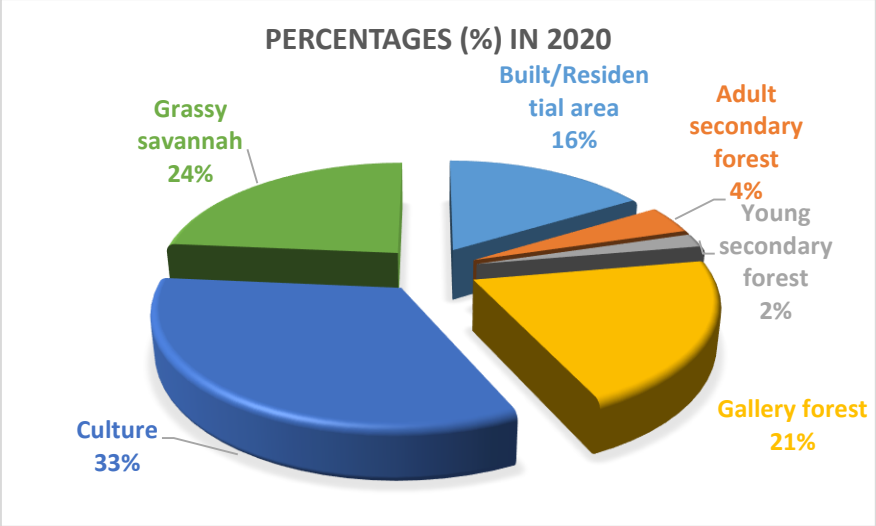
The table above shows the different land use/Land cover occupation during the year 2020. Figure 9 is a remote sensing analyses that was carry to bring out the information in table 5.



Source: Landsat image of 2020

Figure 9: Land use/Land cover of Obala in 2020

The analyses figure show the rate of the different Land use/Land cover occupation of 2020 with the use of different couloir texture. The figure information is clearly seen in the diagrammatic representation below of the year 2020 Land use/land cover occupation (figure 10).



Source: Field work, 2020

Figure 10: Land use/Land cover percentage occupation of Obala in 2020

From the year 1987 to 2020, we notice Obala subdivision surface area occupation has had a series of changes. From 1987 to 2004 we notice a very slow rate in the built-up area occupation that is, 7.01% and 9.19% respectively. The surface area had an increase of 2.8% in more than 15years, as compare to the forest which was still more present in the area. The subdivision witnesses a rapid increase in her built-up area from the year 2004 to 2020 that is, 9.19% and 16.31% respectively. During this period of 2004 to 2020 the build-up increases was 7.12% in same more than 15years which is 3 time that of the period from 1987 to 2004.

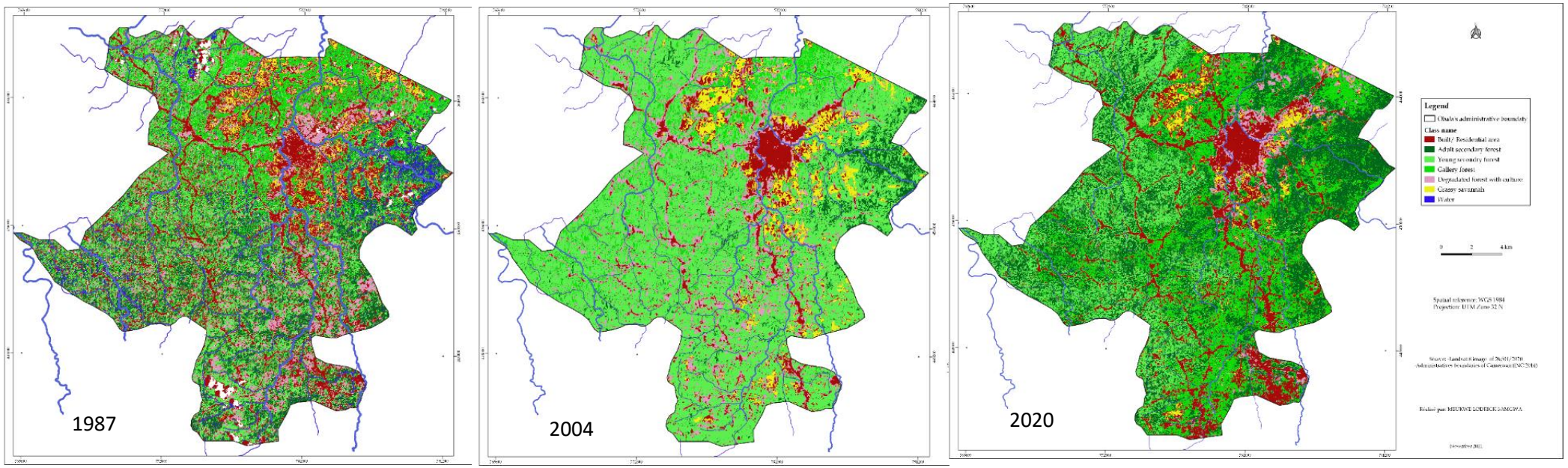
Figure 6, 7 and 8 above present maps of the Obala subdivision showing the evolution of the surface area occupation from the year 1987 to 2020. From these figure observe the slow evolution of the built-up from 1987 to 2004, while from 2004 to 2020 the subdivision witnesses a rapid increase in it built-up area. This can be attributed to rapid increase in the population of the area due to its proximity to cities such as Yaounde.

Table 6: 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 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 spatial 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 11).



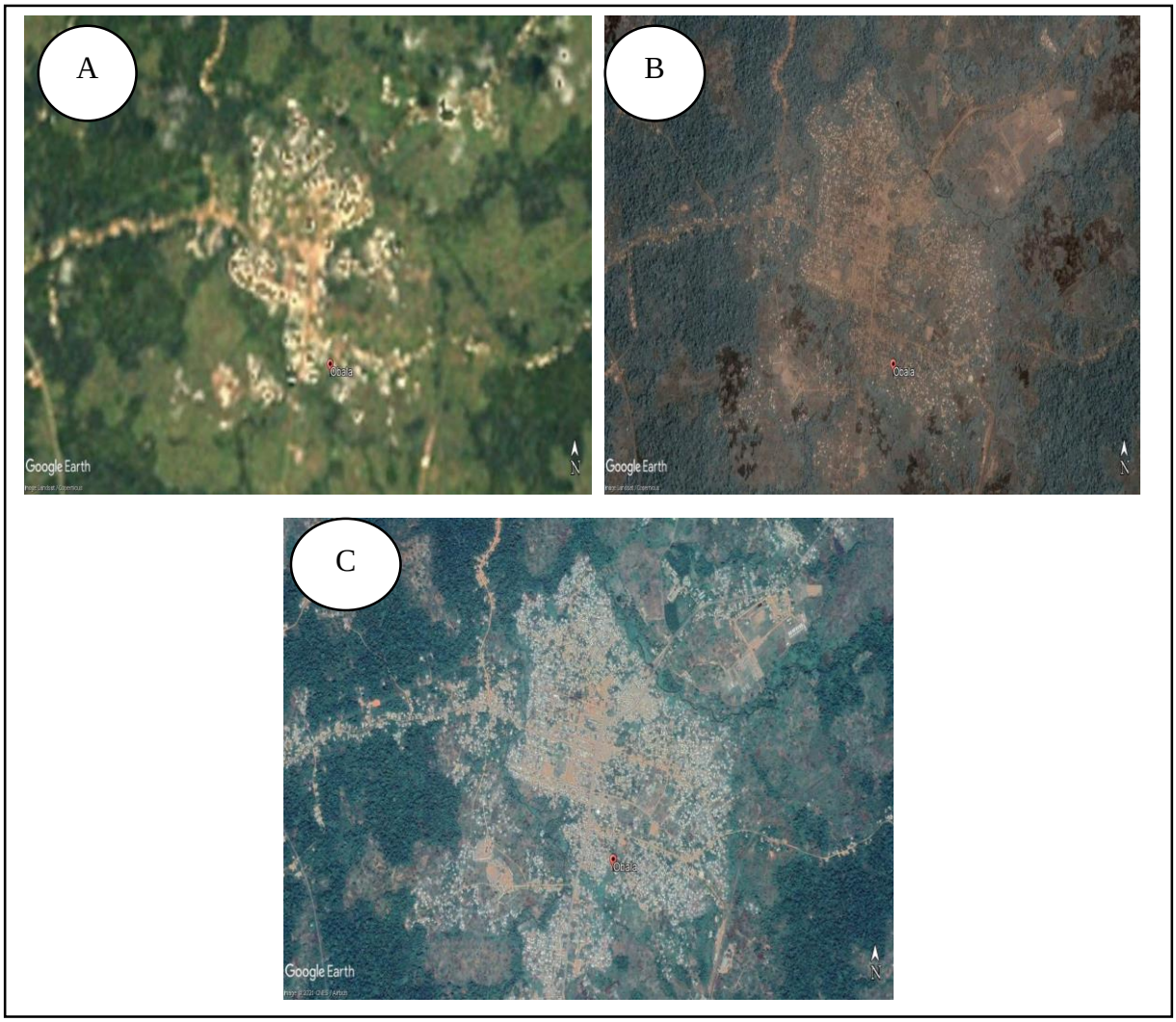
Source: Landsat image of 1987, 2004 and 2020

Figure 11: Land use/Land cover of in 1987, 2004 and 2020

The figure shows the summary of land use and land cover evolution in the Obala sub-division during the 33 years. With the aid of the data gotten from table 5, we see the rapid increase of urbanization in the Obala sub-division over the past years, with a concentration in one specific area as seen.

1.2.2- Satellite view of the urban area in Obala

The urban area of the Obala subdivision has evolved over time from 1987 to 2020. The figure below can be more explicative, showing the view of the urban space with the aid of Google satellite images. Google Earth Pro in 1987, 2004, and 2020 (Figure 12).



Source: Google earth pro 1987, 2004 and 2020

Figure 12: Obala urban area presentation

Figure 12, above Image A, shows the urban space of Obala during the year 1987. Image B is that of the year 2004 and Image C, 2020. From the different images, we see that urban space

was not that significant in the year 1987, but in the years 2004 and 2020, we see that urban space has greatly changed. Showing the rapid urban spatial expansion of the area.

From figure 12 above, we observe a dynamic evolution of the urban space. In the field, we questioned the households and obtained interviews with them to obtain their point of view on the urban spatial expansion of the Obala subdivision, and we succeeded in producing the following result.

1.3- Respondent perception on urban spatial expansion in Obala

In the field, we thought it wise to evaluate the respondent's perception of the rate of expansion in Obala. After questioning and carrying out a semi-interview, we came up with the following result on the household perception of the phenomenon: According to those advocating for the expansion rate of Obala, they justified it with the following reasons or factors:

Table 7: 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

Table 7 above shows the perception of the household question point of view on the potential reasons that have been influencing the expansion of Obala. Based on the data on the table, 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.

1.3.1- Closeness to the political capital town of Cameroon (Yaounde)

The subdivision of Obala is closer and is a satellite town to Yaounde, where the phenomenon of urban spatial expansion has a way of taking place. As the political capital for the past year, its population has been facing a rapid increase. This increase is being observed by the inhabitants, who now find it difficult to displace from one end of the town to another due to congestion. Also, pollution (especially noise pollution) can be seen as one factor which influences some inhabitants to relocate to the satellite town, because not everyone likes the noise all the time, especially that of vehicles (taxis) that horn all the time. Obala subdivision, being closer (situated some 40km away), is easily accessible due to the recent rehabilitation of the road Obala-Yaounde, which has helped reduce travel time (now Obala-Yaounde is just about 45m of journey) and the population of Yaounde, thus giving way to the urban spatial expansion of Obala.

Land, on the other hand, has become increasingly expensive in the political capital in recent years, and not all residents have access to it. This situation has forced most of the inhabitants, government workers and some businessmen, to make a decision and settle in Obala. Taking into account that the subdivision of Obala has enough land available for construction, the urban spatial expansion is taking action with the construction of new infrastructure at the peripheries of the city.

1.3.2- Position of the town of Obala on the national road N°1

The town of Obala is situated on national road number one, some 40km of which is part of the kilometres linking the central region to the northern part of Cameroon. With a population of 4262 inhabitants in the year 1967, A. Franoueville (1967) today, the subdivision has more than 100,000 inhabitants. Since the rehabilitation of the national road during the year 2000, it has attracted a high number of people from different ends of the country who frequently leave their homes far away to settle in the division and the neighboring villages. This situation has greatly affected the urban spatial expansion situation of the subdivision by requiring a road pass development to follow.

Table 8: Percentage of the positive response to urban spatial expansion

Response	Frequency	Percentages
Yes	106	91.38
No	10	8.62
Total	116	100

Source: Fieldwork 2021

During the fieldwork, a total of 116 households were presented with a questionnaire to answer, and we came up with the following result: 91.38% of them confirm that Obala is witnessing a rapid expansion accompanied by the construction of new houses at the peripheries. While, on the other hand, only 8.62 percent propose something different about Obala's expansion situation in recent years. Taking this into consideration, it is obvious that the subdivision has witnessed a rapid urban spatial expansion during the past few years.

The Obala subdivision is going through a rapid urban expansion from the response it has gotten from the households. A series of semi-interviews and questions were presented to the different houses on the urban spatial expansion of the subdivision, which helped to have data on the phenomenon. To be sure that the responses given are perfect, we base our analysis on the question of "how long have you been in Obala?" From the household interview, we notice that those who have been in Obala since 1959 confirm that the town has changed enormously as compared to the past.

1.4- Influence of infrastructure on expansion

The occupation of land in the subdivision of Obala has been increasing rapidly for the past few years. Carrying out field observation, the urban area has seen a rapid increase in housing, health and educational infrastructure in the area. The increase in land occupation favours urban spatial expansion, given the fact that when an area witnesses a new activity on a piece of land, such as infrastructural development, which involves.

1.4.1- Housing infrastructure

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 1: Housing infrastructures in Obala

Mbukwe 2021

The plate above shows two pictures, A and B. In A, we see some housing infrastructure still under construction in one of the new quarters in Obala; in B, we see 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, the areas depicted in the map above 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.

1.4.2- Health and Educational infrastructures

The subdivision of Obala has a high number of schools, hospitals, and clinics dispersed all over the different localities. The subdivision has a total of 13 health centres, 2 district hospitals, and 4 private hospitals, which provide services for the health condition of the inhabitants. In the sector of education, the subdivision has a total of 32 schools: 19 public schools, 12 private schools, and 10 nursery schools (5 private and 5 public).

Plate 2: haelth and educational infrastrutures in Obala

Mbukwe 2021

The photos in the plate present the entrances of two secondary schools in Obala; photo A, the entrance of the government bilingual high school, and photo B, the entrance of the government high school in Obala. Both schools occupied very large surface areas in Obala. Photo C is at the entrance of the district hospital of Obala, and Photo D shows the surface area being occupied by the district hospital of Obala.

New schools have been seeing the light during recent years in the subdivision of Obala. These constructions have been influencing the land occupation and also displacing the inhabitants from the congested and saturated town centre area and relocating to the peripheries, creating new quarters. It is obvious that most people like to settle near schools so as to avoid the long distance covered by their children. Thus, giving way to urban spatial expansion with the construction of new houses by the inhabitants wishing to offer education to their children.

Plate 3: New educational infrastructures in Obala

Mbukwe 2021

The plate is made up of pictures A and B is that of a newly constructed primary school in one of the quarters that did not have any schools. The school was constructed thanks to an initiative by a private individual, which is of great importance to these populations who were forced to register their children in faraway distance schools. It has encouraged many of its inhabitants to relocate to the peripheral quarters.

On the other hand, clinic construction has been seeing light during recent years in the subdivision of Obala. These constructions have been influencing the land occupation and also displacing the inhabitants from the congested and saturated town centre area and relocating to the peripheries, creating new quarters. The resettlement on the outskirts paves the way for the subdivision's urban spatial expansion.

Plate 4: A newly constructed clinic at the outskirt of Obala

Mbukwe 2021

This plate of pictures A and B shows one of the new clinics constructed in a newly created quarter far away from the centre of Obala town. The clinic was constructed due to the rapid increase in the population and the rapid development of buildings in the newly developed quarter at the peripheries, with the aim of providing first aid services to the population in this area.

1.4.3- 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.

Plate 5: The railway station of Obala

Mbukwe 2021

The pictures in plate 5 shows the railway station of Obala in photos A and B. This station brought many changes in the dynamic of the urban spatial expansion of the Obala subdivision.

1.5- Influence of the physical milieu to expansion

The influence of the physical milieu on the expansion of Obala during the colonial period was that the colonial master decided to divide Obala into administrative, commercial, and residential areas. The division was made in consideration of the favourable physical milieu the area has over some other localities. This division is marked by the condition of spatial expansion.

1.5.1- The relief nature of the Obala Sub-Division

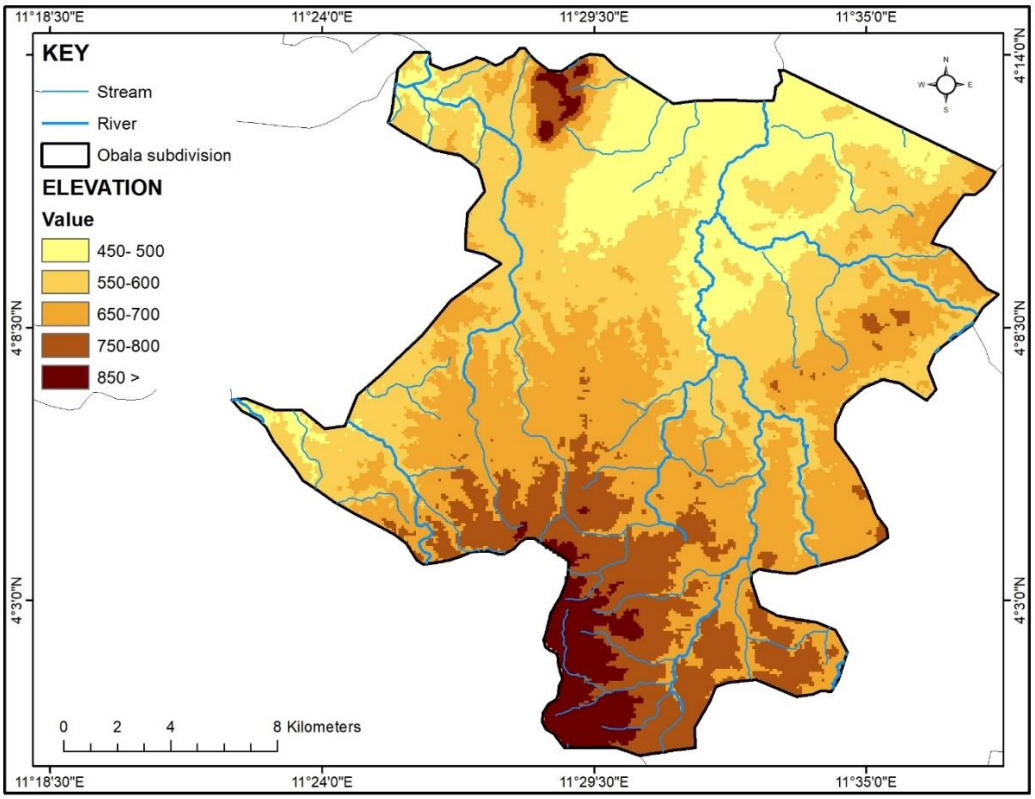
The Lekie division is one of South Cameroon's vast plateaux with an altitude of between 650 and 800 metres (Matcheubou 1986). The Obala subdivision's relief is characterised by an average altitude of 600 meters. Even though other areas in the subdivision's highest point go up to 800 meters, the rest of the Obala surface area is a vast plateau from the centre to the Batchenga area, which is a nearby locality.

1.5.1.1- The topography of the Obala Sub-Division

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 spatial 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.

1.5.1.2- The hydrography of the Obala Sub-Division

The Obala site is protected by a series of rivers; to the north by "Afamba", which marks the limit of the town; to the west by "Foulou", and to the south by "Bikogo". The relief separation of the river in the town gives it a longitudinal shape. The streams are not that numerous and are seasonal. Most of them flow into the major rivers like the "Afamba" and "Foulou". During the dry season, most of the streams and rivers in Obala are still full of water. This is an advantage to the population to have access to water all year round for their needs.

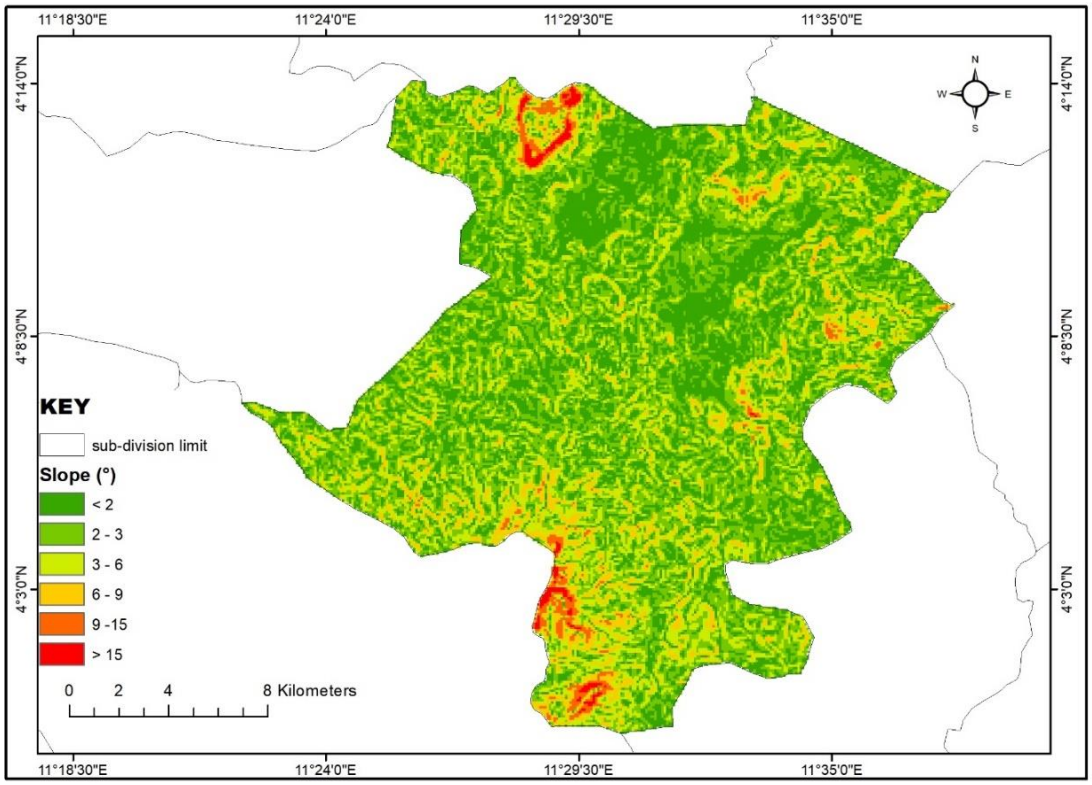


Source: NIC, 2014

Figure 13: Hydrography and Topography of Obala

1.5.1.3- The nature of the slope of the Obala Sub-Division

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 spatial 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 spatial expansion.



Source: Digital elevation model (DEM) of Cameroon

Figure 14: Slope nature of Obala

1.6- Impact of the physical factors

The physical factors, which include relief, topography, hydrology, and slope, are really impacting the urban spatial 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 spatial 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.

1.7- Neighbourhood evolution in Obala from 1987 to 2020

Neighbourhood evolution in Obala from 1987 to 2020 the quarters of Obala were not as many as the ones we have today. Following the last survey in 2005 on the number of people in different households in Cameroon, it was noticed that Obala town is made up of 13 quarters (BUCREP third survey 2005). Following the observations made on the field, we notice there has been the development of new quarters (Bilibi).

During the 1980s, quarters were not as they are today. The town was made up of only one administrative quarter called "Bami," which is "Elot 2," and it has been the only quarter well-traced. The rest of the quarters were not that well traced, most of them with very difficult roads, which made it difficult for the inhabitants to move in and out of their various quarters. In recent times, due to the plan of the council to ameliorate the road network of the Obala urban area, a series of projects have come up to widen the road sizes and rehabilitate others. The quarter's evolution was fast changing, with a high movement of migrants from neighbouring towns and localities. In 1987, Obala had just five quarters, with one being an administrative quarter. In 2004, it was made of 8, and today it has a total of 13 quarters in all (field data, PDC 2013).

Table 9: Neighbourhood evolution in Obala from 1987 to 2020

YEARS	1987	2004	2020
Number of quarters	5	8	13

Source: Field data, PDC 2013

According to field data from PDC, the majority of the houses in the different quarters are built with the same materials. However, the houses in the various quarters were constructed with the use of ancient materials, that is, mud and bamboo. Even though the ancient method of construction is still dominating in the old quarters, the new quarters are being dominated by the Morden method and materials. The population who are mostly using modern materials and the migrants from other regions, especially those from big cities like Yaounde and Douala, who possess high incomes that permit them to do so.

Source: Author's modification, OSM (open street map)

Figure 15: The Obala Neighdourhood sprawl

Form Figure 15 above is a sketch representation of the urban area in the Obala sub-division. Here, we tried to show the spatial displacement of the different quarters in Obala town.

1.8- Conclusion

Obala is an area, like others in the world, going through the process of urban expansion. This chapter aims to present the rate of urban expansion and the cause of the expansion. After a series of data analyses, interviews, and questionnaire administrations to the households, the findings reveal that the urban spatial expansion is due to its relief nature, specifically the topography, which is of the plateaux type. The cause of the urban expansion is also due to the proximity of the area to cities like Yaounde and the rapid increase in the number of infrastructures at the peripheries of the outskirts. As a result, Obala subdivision during the years 1987 to 2020 has gone through a rapid urban spatial expansion with an expansion rate of 0.92% per year.

CHAPTER 2: FACTORS OF RAPID URBAN SPATIAL EXPANSION IN THE OBALA SUBDIVISION

2.1- Introduction

As observed from past reports and analyses, the area has witnessed a rapid expansion as compared to its surrounding localities and town. This change is caused by factors of expansion present in the area. So in this chapter we are to analyse the factors so as to present their effect on the expansion of Obala. To get the data and information, we defined a well-constructed methodology that involved pre-field observation, interview, and administering of a questionnaire.

2.2- Factors of urban spatial expansion of Obala.

Following the series of interviews conducted in the study area, urban spatial expansion is characterised by two sets of factors. These factors are internal and external, some of which have no influence on the study area and others with significant influence on urban spatial expansion. Taking into account the semi-structural interview, questionnaire administration, and field observation, the following data and statistical information on the factors (internal and external) influencing the urban spatial expansion of the Obala subdivision

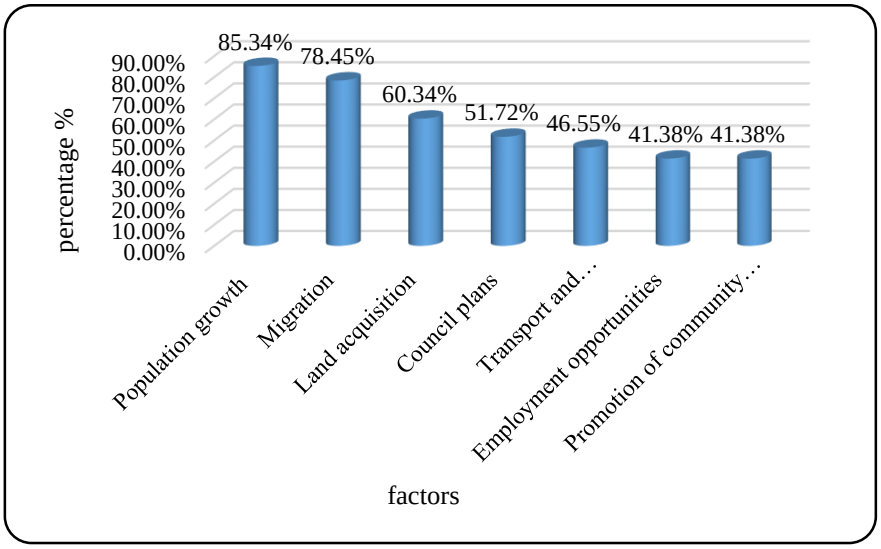
The internal factors being considered here are those things present in the subdivision and those that affect the changes taking place in the subdivision. The urban spatial expansion of Obala sub-division has been influenced by a variety of internal factors such as land acquisition, population growth, council plans, transport and communication network developments, job opportunities available, and promotion of community work. The urban spatial expansion of the Obala subdivision has also been influenced by an important external factor, which is that of migration, as observed after the administration of a series of questionnaires to the 116 households selected from the different quarters

Table 10: Factors influencing the urban spatial expansion of the Obala subdivision

Factors	Respondent			Percentage %		
	Yes	No	Total	Yes	No	Total
Population growth	99	17	116	85.3	14.7	100
Migration	91	25	116	78.4	21.6	100
Land acquisition	70	46	116	60.3	39.7	100
Council plans	60	56	116	51.7	48.7	100
Transport and communication network	54	62	116	46.6	53.4	100
Employment opportunities	48	68	116	41.4	58.6	100
Promotion of community works	48	68	116	41.4	58.6	100

Source: Fieldwork 2021

From the table above, we observed the factors responsible for and influencing the urban spatial expansion of the Obala subdivision. When a factor is regarded as having a high influence on a phenomenon, its percentage should be greater than 50%.Then, based on the results obtained from the households, we notice that among the factors exerting high pressure on the urban spatial expansion of the Obala subdivision are population growth (85.34%), migration (78.45%), land acquisition (60.34), and council plans (51.72%).The other factors are not left out, even though their percentages are high, because they still exert an influence on the urban spatial expansion of the subdivision.



Source: Fieldwork 2021

Figure 16: Factors influencing the urban spatial expansion of the Obala subdivision

2.2.1- Population evolution in the Obala sub-division

The Obala are a large ethnic group in the central region, following the capital city of Yaounde. The population has been regrouping according to the effective number of people per square kilometer. The Obala subdivision counts about 100 to 200 inhabitants per km2. The Obala subdivision is characterised by a high rural population in the centre region as compared to the other areas in the region, with just 5 to 20 persons per km2.

On the other hand, the Obala subdivision urban area is characterised by a high number of 422 inhabitants per km2. Due to the urban spatial expansion that the subdivision has witnessed over the past few years, there has been a rapid increase in the number of inhabitants per square kilometre as compared to the other nearby localities in the central region.

2.2.2- Population of Obala

Population has been one of the important factors responsible for changes in the natural space of a given area world-wide. Cameroon has a population of 7 663 255 in 1976, 10 493 655 in 1987, and 17 463 836 in 2005 (RGPH 1976, RGPH 1987, 3eme RGPH, BUCREP 2005). Following the last population census carried out in 2005, it reveals that the center region, with a population of 3 098 044 (BUCREP 2005), is considered the highest of the other regions. This large population lives in the political and capital town of Cameroon.

The Obala subdivision, found in the centre region's Lekie division (Lekie division with a population of 286 050 inheritance), has the highest population of 78 929 (BUCREP 2005) as compared to the other subdivisions. Today, the population of the sub-division is estimated to be 133,014 inhabitants (PCD of Obala 2013). The fast growing population of Obala is due to its geographical position and following the history of the area.

Table 11: 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: BUCREP (*Bureau Central des Récenssement et des etude de population*), NIS (National Institut of Statistics)

2.2.2.1- Population growth in the Obala Sub-Division

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 spatial expansion of the Obala subdivision

2.2.2.2- The Obala urban population

Following the past work on the study area and the information obtained from the municipal council and the PCD (Programme communal de développement), the urban population of the Obala was not increasing at a fast rate over the past years. But recently, specifically from the period of 2000, that subdivision has witnessed a rapid increase in its population.

The population of the subdivision of Obala has had a rapid increase in its urban population over the past years, as observed by the statistical information gotten from the different sources available. The population increase is attributed to the presence of some pull factors. In 1987, the area's urban population was 13,101. In 2005, the population was 29054 inhabitants. In 2013, there were 32,888 inhabitants (Source: PCD (plan communale de dévéloppement d'Obala), BUCREP (bureau central des recenssement et des etudes de population), and NIS (National Institute of Statistics). Based on the Obala urban population in 2020, which was 52950 inhabitants, it is obvious the Obala urban population has greatly increased during the past years.

This rapid increase in the population of Obala town is greatly attributed to the closeness of the town to the capital city, Yaounde, which pushed many of its residents to resettle in Obala due to the capital city's fast increase in population, leading to little land and high living standards that many could not support. Also, in the subdivision of Obala, there is a wide and available land that is used for agricultural activities, many of which are attached to.

2.2.2.3- Average age of the population

The population age group of the Obala subdivision is quite impressive. Following observation, it was discovered that the majority of the Obala population is under the age of fifteen. The average age ranges from 15-35 years, which is a great labour force for the development of some economic and social sectors of the subdivision. Taking into account that the presence of the labour force of the younger generation with the surplus from the migrant population has been acting as a boost factor to the development of the sectors.

2.2.3- Migration

Migration has been a factor that brings many changes in an area when it comes to development. In the subdivisions, 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) (NGA 2020). 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 spatial expansion with the construction of new houses, new markets, and other essential needs.

2.2.3.1- The attractive activities in Obala

The dynamic social atmosphere that exists in Obala encourages the migration of most migrants to settle in Obala. From past work, it is noticed that most migrant installations in Obala are due to high agricultural potential, friend influence, and, most importantly, the welcoming nature of the local population. Also, the migrants are welcome due to the high degree of ethnic solidarity that exists among the tribes present in Obala.

2.2.3.2- Migrants activities in Obala

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% (Nga 2020), most

of which is in the commercial sector. This sector deals with agricultural products, electronic products, and construction materials.

Plate 6: Some stores and workshops owned by migrants in Obala

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Photos A and B in plate 6 both show entre of building materials chopped by some migrants in Obala.

Apart from the commerce sector, we find an active population of migrants in the agricultural domain too. Considering that Obala is an agricultural potential zone with a variety of agricultural products, they are in high demand in the market and also in neighbouring towns like Yaounde, capital of Cameroon. Obala is also an area with abundant land for agricultural opportunities, so there is a need to be exploited.

Photo 1: Cultivated area by some migrants

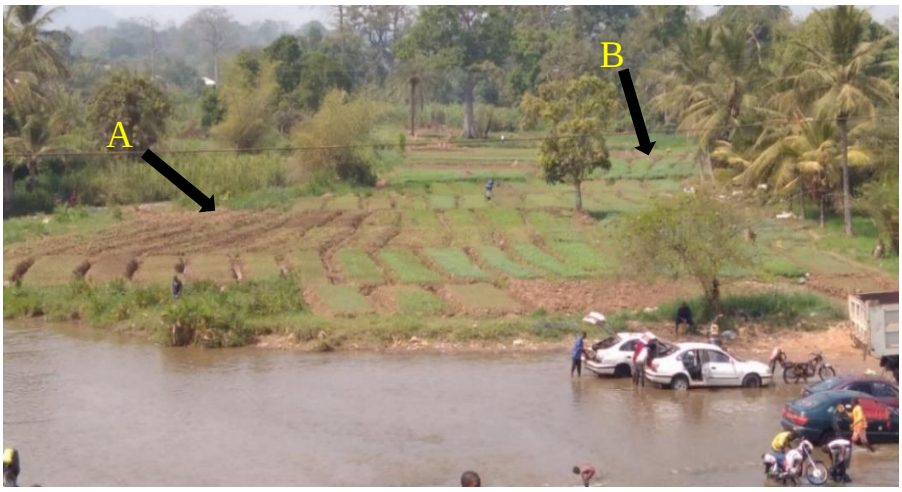

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Photo 1 above shows the waste land beside the "Afamba" river being used for agriculture by some migrants who have settled in Obala over the past years. The arrows A and B indicate the area in the photo where we clearly see the farmland being cultivated by the migrants.

2.2.4- Land acquisition in Obala

The Obala subdivision, with a large surface area of about 475 km2 and just 25% covered by the urban perimeter (PCD 2014), provides enough land for the dependent population. Taking into consideration that the natives of the subdivision provide an easier way for strangers to get into the land, observing that the council doesn't take an active part in land and that instead private individuals are the ones doing the delimitation and selling of land.

The lack of council control on land sales by the population gives way to the population coming from neighbouring towns and faraway towns getting into possession of land easily. Thus, they have an influence on the urban spatial expansion, especially when most of them decide to acquire land in the peripheral quarters of the urban town in the Obala subdivision.

2.2.5- Job opportunities in Obala

The Obala subdivision has witnessed a variety of new activities in recent years, which today offer a wide range of job opportunities to the population of the urban area and the surrounding villages. For instance, the project of the construction of the new take-over way being constructed at the entrance of the urban zone of the Obala subdivision today has attracted a high number of unemployed people who want to have access to a job. At the end, some of the

job sackers find themselves in the subdivision, and some decide to settle there. Due to this, they look for land for construction and thus play a role in urban spatial expansion.

2.2.6- Transport and communication network development in Obala

Considering the position of the Obala subdivision nearer to the capital city of Yaounde and the passing of the national roads numbers 1 and 4, it is obvious that the subdivision's transport and communication network will witness some improvement. In recent times, national road number 1 has undergone some rehabilitation from the years 2008 to 2010. This rehabilitation brought a significant change in the urban sector of the subdivision due to the passing of the roads in the center town, connecting the center region to the northern region of the country. Because of these roads, some residents of the capital city have decided to relocate to the urban center of the Obala subdivision.

2.2.7- Council plan

General plans for development by the council are generally to improve the situation of the community (subdivision). In recent years, the Obala subdivision has seen development projects such as the opening of roads connecting the various quarters of the urban milieu to the periphery. This greatly influences the urban spatial expansion of the subdivision.

2.2.8- Promotion of community works

In general, community work is observed as an important factor that influences the development of an area. In the Obala subdivision, we notice that the inhabitants have been carrying out community work in order to develop their quarters. One of the quarter heads, "Foulassi," accepted our semi-interview.

2.3- Actors of urban spatial expansion of Obala sub-division

Actors are an important element in most of the phenomena taking place in the world as a whole, and Cameroon is not left out. Bringing it to our research study area, the urban spatial expansion of the Obala subdivision has witnessed the influence of some major actors whose roles are crucial. Based on the responses gotten from the households in the Obala subdivision in relation to whether there are actors who take part in the changes observed, 63.79% of them confirmed it with no thought, while the rest, 36.21%, did not support the point.

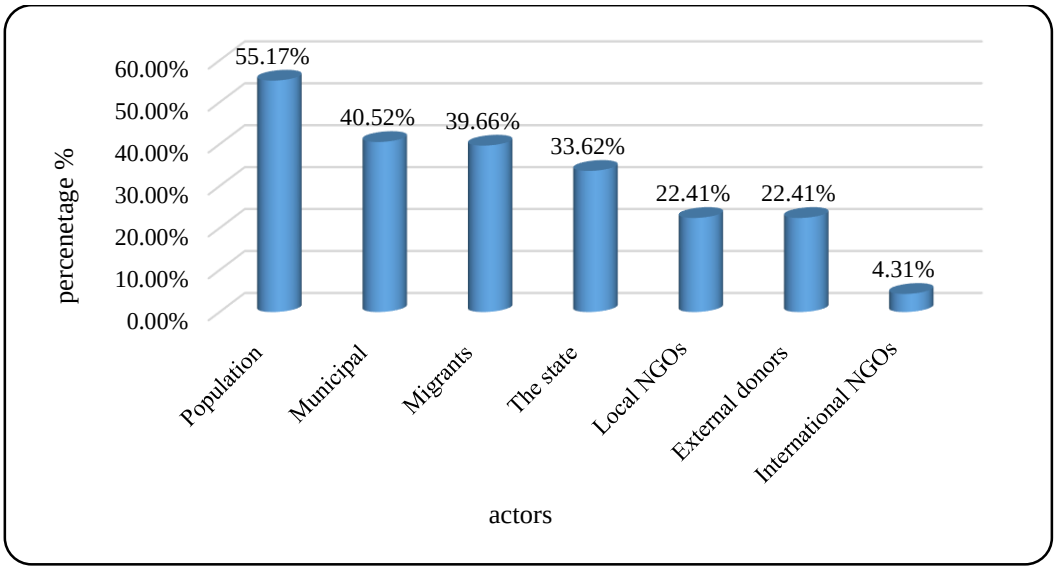
After reviewing the field observations, semi-structural interviews, and question administration, we conclude that actors are critical to urban spatial expansion. The actors involved are both internal (the population, local NGOs, and the municipal council) and external (migrants, international NGOs, and the state's external donors).

Table 12: Actors involve in the urban spatial expansion of the Obala subdivision

Actors	**Respondent**			**Percentage %**		
	Yes	No	Total	Yes	No	Total
Local population	64	52	116	55.17	44.83	100
Municipal	47	69	116	40.52	59.48	100
Migrants	46	70	116	39.66	66.34	100
The state	39	80	116	33.62	66.38	100
Local NGOs	26	90	116	22.41	77.59	100
External donors	26	90	116	22.41	77.59	100
International NGOs	5	111	116	4.31	95.69	100

Source: Fieldwork 2021

The table above depicts the various actors, both internal and external, involved in the urban spatial expansion of the Obala subdivision following the collection and treatment of field data.The result proved that in the Obala subdivision population, the actors who take part in more of the urban spatial expansion have a percentage of about 55.17% as compared to others who are below 50%. In that order, the municipal council (40.52%), migrants (39.56%), the state (33.62%), local NGOs (22.41%), external donors (22.41%), and international NGOs (4.31%), in that order.



Source: Fieldwork 2021

Figure 17: Actors involve in the urban spatial expansion of the Obala subdivision

The internal actors involved have been playing roles really equivalent to the responses given to us by the households interviewed and questions based on the urban spatial expansion of the Obala subdivision.

These are the actors who have been identified by the household as having played significant roles in the subdivision in the past. The Obala subdivision, through these actors, has benefited from important development, such as infrastructure development, social amities, and economic improvement.

2.3.1- The local population influence in Obala

The population makes reference to private individuals. The increase in the number of people in an area usually brings many changes. In the Obala subdivision, the population has been engaged in many sectors so as to help increase development through infrastructure construction. With regard to the observations made in the field, most of the buildings are owned by private individuals. These individuals have built impressive infrastructure on the subdivision's outskirts, which has changed the subdivision over the years. Most of the buildings are for business purposes, and others for settlement.

The construction being done by the population plays a great role in the expansion of the occupied surface area. Those being constructed at the peripheries attract some of the inhabitants to move from the town centre to the periphery area, thus influencing the development of other activities. Thus affecting the urban spatial expansion of the town.

Plate 7: Buildings constructed at the peripheries quarters

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Plate 7 presents some construction in the two different quarters. The photo A found in the quarters of "Foulassi" shows an upstairs building being constructed by an individual for commercial use. While photo B shows the primary school constructed by another individual, photo C shows a well-constructed building in one of the peripheries for living in. And photo D shows another building under construction in another peripheral quarter. These are impressive buildings being constructed at the peripheries due to a lack of space in the centre of town and at the same time affecting the urban spatial expansion of Obala. Following the information

gotten from some households living beside these buildings, the space being occupied by these buildings is land that was empty some eight years ago. It is obvious that with the construction of these infrastructures, we have observed a high number of the population who have migrated to these peripheral quarters due to the presence of these facilities.

The above pictures show the realisation being done by the population (private individuals). The development of the national road N°1 gave individuals a way to express their ideas on the infrastructural development of Obala (photo A, the building is constructed on the side road of the national road N°1). Following the idea of Mody (1997), that infrastructural development plays a vital role and is a determinant element in the urban spatial expansion of any given territory or region of the world, Neba (2012) shares the same idea

2.3.2- Local NGOs in the Obala

According to Law No. 90/053 of December 19, 1990, for the creation of NGOs in Cameroon, NGOs following the degree refer to local, national, or foreign associations that are characterised by non-profit objectives. The subdivision of Obala is characterised by a variety of local NGOs who are actively engaged in the development of infrastructure. The institution has been engaged in the sectors of health and education with the construction of a large number of buildings to assist the inhabitants.

Plate 8: Hospital constructed by one Local NGO (Réseau Profam)

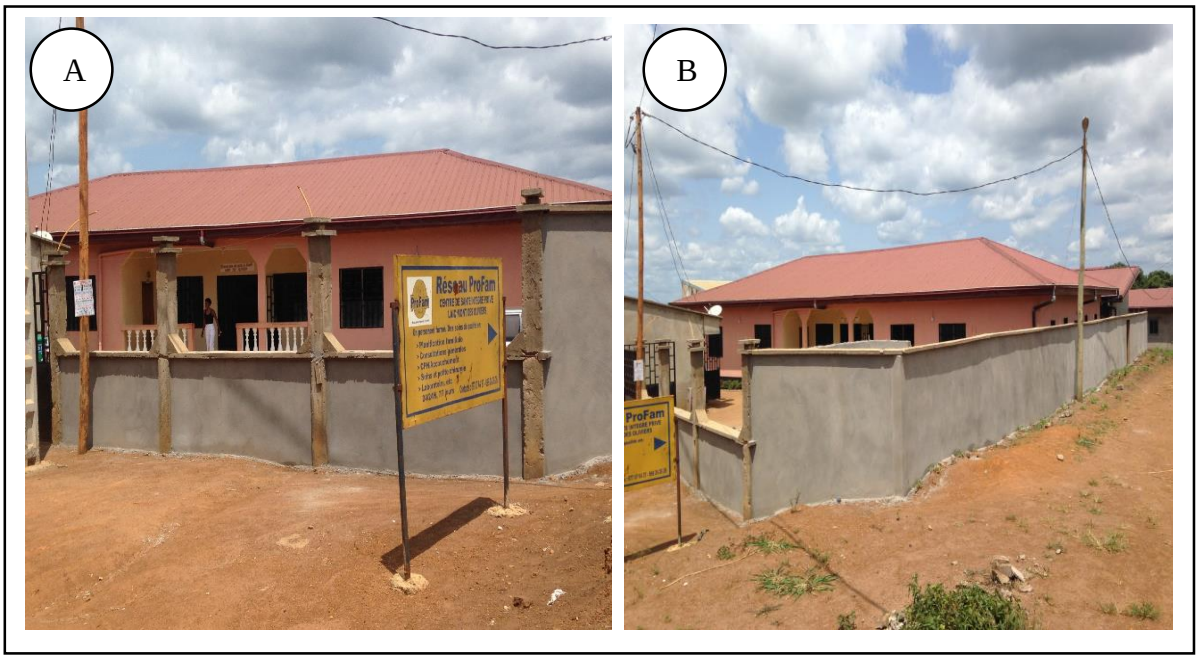

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Plate 8 shows two photos, A and B, which show the hospital constructed by a local NGO in one of the quarters of Obala. Considering the increasing percentage of the population in recent years, a number of health care infrastructures have been put in place by local NGOs to cater to the growing population in the periphery who may have difficulty reaching the district hospital in the center of town.

2.3.3- Municipal council

The council of the Obala subdivision, with the coming and implementation of the decentralisation policy, the municipal council, has been playing an impressive role in the different development activities that are, in one way or the other, affecting the subdivision in urban spatial expansion. Despite its active participation in development activities, the council is not producing positive results

The rehabilitation of these roads by the council opens the way to the peripherial 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 9: Road rehabilitation by the municipal Council

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From Plate 9, 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.

2.3.4- Influence of migrants

According to some authors, migrants (immigration) are actors involved in the urban spatial expansion of an area. Considering the Obala subdivision's proximity to Cameroon's capital city, Yaounde, which influences the entire subdivision in a variety of ways and being a town considered the junction town between the North and South, most of the inhabitants of the capital city have been relocating to the peripheries of the city and others to nearby towns like that of Obala. Due to this, it is obvious that these migrants play roles in the subdivision.

Plate 10: Some migrant construction

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From Plate 10, picture A is that of a house being constructed by a migrant who recently settled in Obala town, and photo B is that of a hotel being built by another migrant in one of the quarters of Obala town. These are just a few of the many structures that the migrants in Obala have built. Taking the important role they play in the urban spatial expansion of any area in the world, Cameroon and Obala in particular,

2.3.5- International NGO

According to Law No. 90/053 of December 19, 1990, for the creation of NGOs in Cameroon, NGOs following the degree refer to local, national, or foreign associations that are characterised by non-profit objectives. International NGOs have their headquarters or branches established in Cameroon in different regions of the country. In the subdivision of Obala, we notice the presence of people who are actively engaged in the domain, with a number of infrastructures being made and sponsored by them.

2.3.6- Influences of the State

The state is an actor who is always present when it comes to the development of its areas. Due to the increasing number of inhabitants, the recent crises experienced by some regions of Cameroon and the changes observed could not be tolerated without reacting. The subdivision has had an enormous increase in its inhabitants, especially children, who are in need of education. The state, through partnership with some international organisations, carries out the construction and rehabilitation of some schools and health centres for the inhabitants.

Plate 11: Primary school constructed by the State and the European Union with the participation of the local population of Obala

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The state, through the ministry of Housing and Urban Development (MINEDHU), usually organizes most of the activities to help the local populace. The public school built by the state in collaboration with the European Union, the local council, and the people of Obala is

depicted on the plate made up of images A and B. The construction of these helps to attract the population from the surrounding villages and localities to move to Obala for the education of their children.

"External donors" refer to individuals not residing in the subdivision but engaged in the socio-economic development of the area. They take an active part in the construction of infrastructure like health and education. The development of infrastructure improves the lives of the people who live there.

Photo 2: Private school constructed by an individuals of Obala

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Photo 2 shows a newly constructed primary school by a private donor to help educate the children in Obala. At the time, the children were forced to travel a long distance from the outskirts of town to the town center to attend classes. The problem was solved with these new schools, and now a large number of people live near their schools.

2.4- The Elites and their influences

The elites of Obala sub-division during the past and recent years have contributed to nearly all the domains of activities so as to see Obala as a well-developed area in the latest feature. During fieldwork in the sectors of infrastructure development, for example, it was observed that most of them were saying and providing proof of the support given to them by the elites in the construction of their houses and in the infrastructural development of the areas as a whole.

Plate 12: Hotel in Construction by an elite in Obala

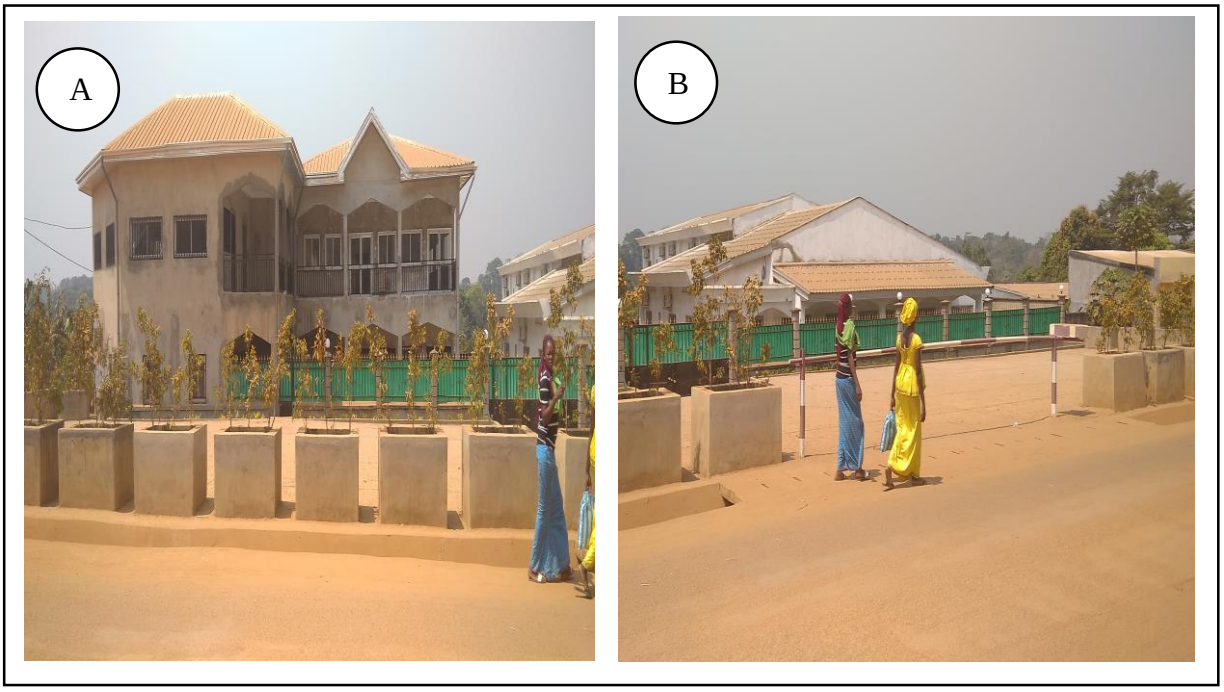

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Plate 12 shows a hotel being constructed by one of the elite in Obala. It is made up of two block pictures. A shows the first block and B, the second. The construction is greatly welcomed by the local population, who are proud to see one of their sons doing great work to brighten the image of their area.

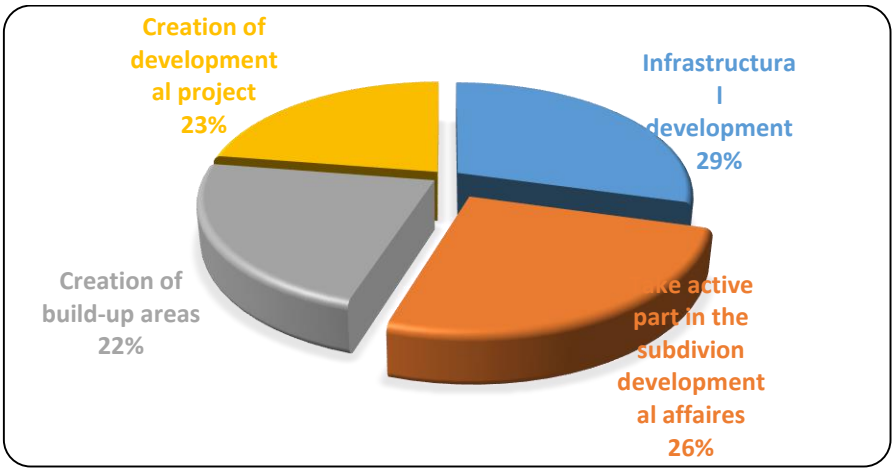
Apart from the above realisation, others have invested their efforts in the rehabilitation of some of the roads in the quarters with authorization gotten from the local authorities to help them in the development of the area. Photo 4 below. The infrastructural domain is not the only sector in which the elite take part. Recently, one of the important elite, the Minister of Health, Mr. Henri Eyebe Ayissi of MINDCAF, a son of the soil, offered a sum of 300,000 FRS to the district hospital of Obala to support the hospital's fight against the recent worldwide disease (Covid 19).

Photo 3: Engines machines use for the construction of the road network

Mbukwe 2021

Photo 3 shows a set of heavy-weight machines used for road construction pacts by individuals in front of their houses. He uses them for the rehabilitation of the roads in his quarters. The arrows A and B point to the engine machines in question.

The actors who took part in the urban spatial expansion of the Obala subdivision have brought many changes and are exerting themselves in many sectors; a variety of factors are involved. The actor's part takes place in the infrastructural development through the construction of social amenities such as houses, taps, and clinics. Apart from infrastructure development, they are also involved in the development and creation of built-up areas and take part in development projects and development planning.



Source: Field data, 2021

Figure 18: Ways through which actors influence the urban spatial expansion

Taking into account the results of the data collected on the ground, the majority of the actors influence the urban spatial through the development of infrastructures such as houses. They also participate in other sectors, such as building up, taking an active role in subdivision development affairs, and developing projects

2.5- Conclusion

To conclude, following the data and observations made during the research in this chapter 2, the factors responsible for the urban spatial are not only those noted during the consultation work, but many others. Findings reveal that factors like population growth, land acquisition, employment opportunities, and proximity of the area to certain cities like Yaounde are those influencing the urban spatial expansion of the Obala subdivision during these past years. Not withstanding, it is important to notice that there are some major actors who also took an active part in the expansion of urban space, even though they did not foresee it that way. Actors like the local population, municipal council, migrant workers, the state, local NGOs, and international NGOs contributed to the rapid urban spatial expansion of the subdivision.

CHAPTER 3: URBAN SPATIAL EXPANSION AND THE SOCIO-ECONOMIC DEVELOPMENT OF THE OBALA SUB-DIVISION

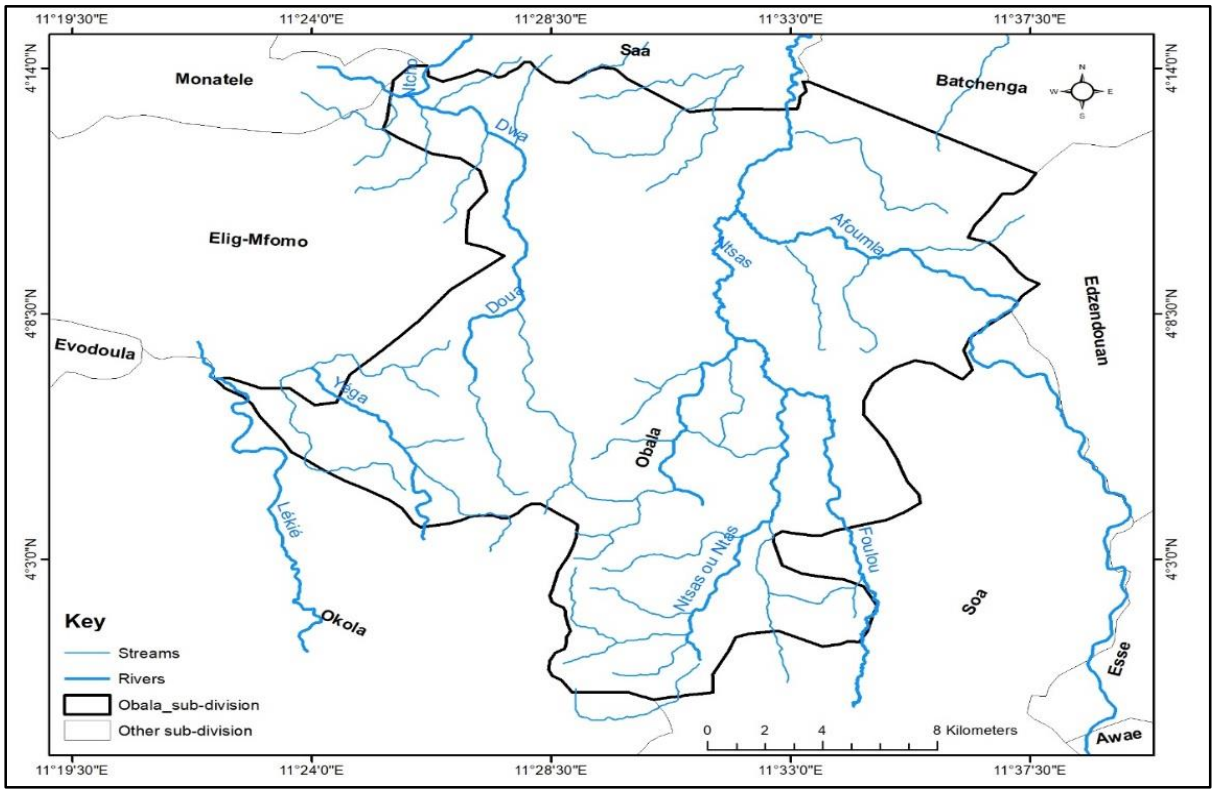
3.1- Introduction

The purpose of this chapter is to evaluate the urban expansion of social and economic development in the Obala sub-division. This chapter focuses on the verification of whether the social and educational sectors have experienced some changes over the past years due to rapid urbanization. At the end of the research project, a large amount of information and data were collected in the field to be analysed in order to produce a conclusive result.

3.2- Urban spatial expansion and social development of Obala

3.2.1- The Obala water supply system

The Obala sub-division is located in an area characterized by the presence of numerous water bodies made up of streams and rivers that rarely flow during the dry season. The main rivers in Obala are the "Afamba" and the "Foulou", which provide water that is used for household duties all year round.



Source: Modified from NIC Mbukwe 2021

Figure 19: The hydrographic network of Obala

The presence of these water bodies in the area paves the way for the installation of portable water infrastructure whose responsibility is to provide portable drinking water to the

local population and its surroundings. CDE (Cameroun Des Eaux) has been the institution responsible for the portable water supply over the past year. But recently, on April 30, 2018, the CDE handed the role to CAMWATER (Cameroon Water Utilities). The institution is doing what is necessary for the portable water supply in the region, but with the rapid increase in population and the high demand from the inhabitants, it has difficulties meeting this demand. The Obala subdivision possesses some hydraulic infrastructure that permits and helps with the conservation and distribution of portable drinking water in the subdivision and its localities. The presence of SCAN WATER tanks was used for the conservation of the water for distribution.

Plate 13: The CDE station which is now CAMWATER office in Obala

Mbukwe 2020

Plate 13 shows the CAMWATER base for portable water treatment before proceeding to its distribution within the household for their different daily activities.

The council, on its part, recently started doing what it could to provide good and portable drinking water to the population. Obala possesses a total of 40 drilling water points (PCD 2014) distributed all over the sub-division. Since 2015, the council has come up with a number of projects so as to improve the provision of water to the local population in partnership with some NGOs, organizations and the state (MINADER, JAPON, SODRAC, BB, SOCAPAL, FIDES, OTELE, and CERAC) to work on how the water problem can be solved in the area.

3.2.2- The Obala Hydro-electricity Supply system

The Cameroon electricity company, created on May 18, 1974, has been changing appellations over the years due to its transfer of management from privatisation to nationalisation. SONEL (Société Nationale d'Electricité au Cameroun) was formed in 1974 and then privatized in 2001 to the benefit of AES Sirocco Limited, an international society, which changed the name to AES SONEL. For the year which followed, the State of Cameroun had 44%, while the private society, Sirocco, owned 51% of the capital, and the remaining 5% was for the workers. In May 2014, the institution changed its name to ENEO Cameroun (energy of Cameroon) after its transfer to the British investment fund, which took control of 56% of the capital and the state of Cameroon's 44%. The institution ENEO today provides Cameroon with a capacity of energy supply of 935MW, which relates to 24 posts and consists of a high tension line of 1944.29 kilometers, an average tension line of 15081.48 kilometers, and a low tension line of 15209.25 kilometers all over the national territory.

Plate 14: Obala ENOE office

Mbukwe 2020

Plate 14 shows one ENEO office branch in Obala, which is responsible for the maintenance of the different installations in the area. In picture B, in the plate, the new type of pole is being used for the installation of high tension in the area due to the rapid degradation of the wood poles being used at first.

Photo 4: The ENEO agent on the field working on electric line extension

Mbukwe 2021

In the photo 4, we see an ENEO agent in the field working on the extension of the electric network in an area where there was no electricity.

The subdivision's residents were in desperate need of social amenities infrastructure, such as electricity.The electricity network in Obala has been managed by a variety of private and national institutions over the past decades. Obala, since her creation as a sub-division and, later on, headquarters of the Lekie division, benefited from her position with the quick installation of an electric station in the region. The construction and implantation of an institution in charge of the electricity supply, SONEL, was of great importance due to the role it played in the social and economic sectors. Today, the structure is being replaced by ENEO for the supply of electricity. Obala sub-division has a total of 45 transformers distributed in almost all the localities, and 16 of them are concentrated in the urban area (PCD 2014).

Table 13: Transformers availability per quarter in Obala

Quarter	N° of transformer	Population per quarter
Abokono	1	1200
Bikogassi	/	/
Ebolakoum	/	/
Elig-bessala	1	3000
Elot 1	2	3000
Elot 2	2	750
Foulassi	1	300
Mboua 1 and 2	1	730
Ndjong-mezegue	2	500
Nkolbikok	1	6500
Obala zone 1	3	6500
Obala zone 2	2	300

Source: Obala PCD 2013

From information based on the installation of transformers in the different quarters of Obala, there is an even distribution of the transformers, which causes the lack of electricity in some quarters and frequent complaints by the inhabitants. To solve the problem, some private individuals have preferred to depend on solar energy, even though it is very expensive. Succeeding in the interviews carried out, a number of 20 households using solar energy brought up points on the amount spent every month, which is enormous for them.

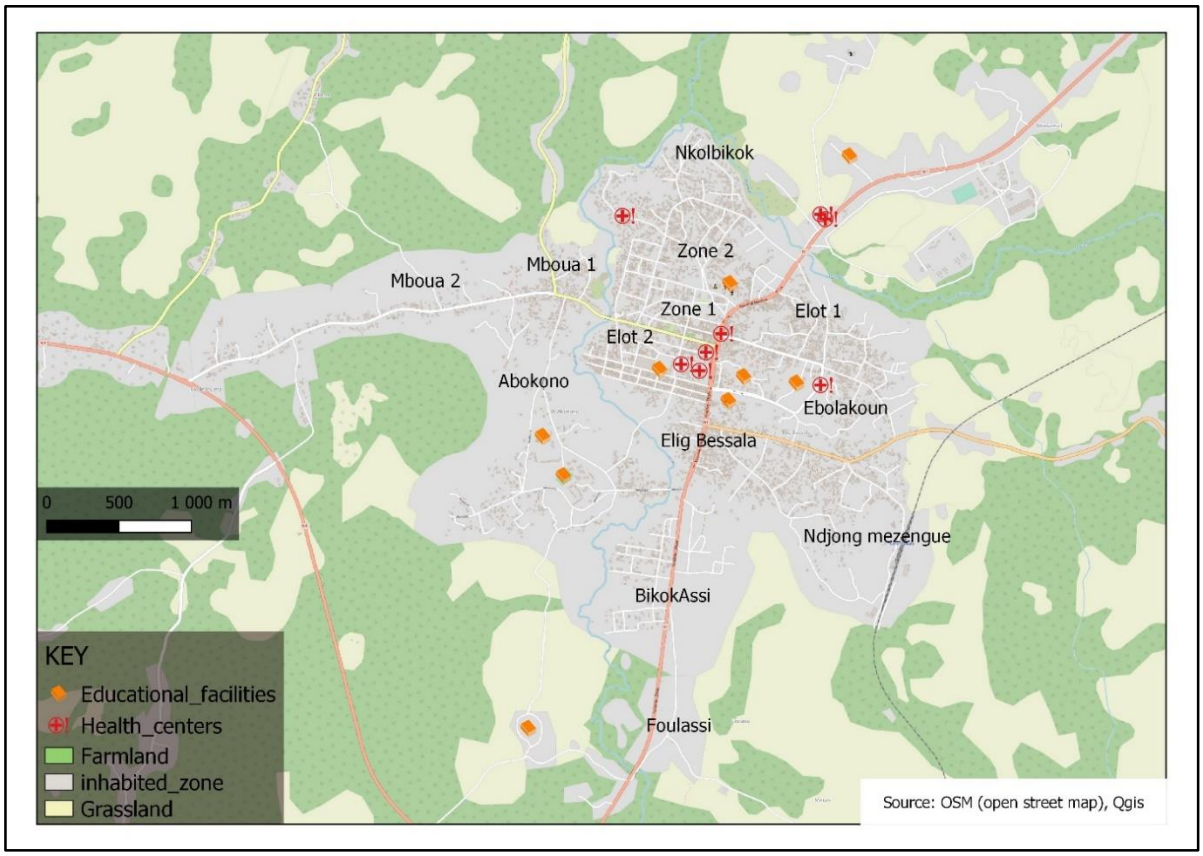
3.2.3- Health facilities in the Obala Sub-Division

The Obala sub-division was formed as a result of rapid urban spatial expansion and population growth in recent years. Today, the subdivision possesses 13 health centers, among which are two important district hospitals and four private health centers in the town of Obala. These health facilities have been helping the population a lot. The Obala district hospital is one of the main ones on which the population depends. Recently, the area has seen a fast growth in the number of private health centers (clinics) built up by local organizations and some private individuals who have the means to do so. The first lady of Cameroon, through her organization, helped the Obala district hospital to be dotted with a new building and inaugurated by the Minister of Public Health on July 28, 2021. Through her projects and future plans, the council

is also working on the rehabilitation of some health centers with the provision of equipment for the health personnel.

3.2.4- Schools/Educational facilities in the Obala Sub-division

Obala's education has had a rapid change in her status. In the past years, the area had just one secondary (Lycée d'Obala). Today, the area is dominated by a total of 31 schools spread across the territory, with 19 being public schools, 12 being private schools, and the nursery school ranking tenth among public schools. Of the secondary schools in the area, there are 20 in all, 13 government high schools and 7 technical. On the field, it was noticed that Obala has really witnessed a high increase in nursery, primary, and secondary schools (colleges). The increase is attributed to the migration of migrants, which has resulted in a boom in the natural population of the area in question.



Source: Modified by Mbukwe form NIC

Figure 20: Map of the health and educational facilities

Figure 20 above tries to show the spatial displacement of some educational and health centers in the urban area of Obala sub-division. The figure shows that health centers and educational

infrastructure are dispersed throughout the area to support Obala's large and growing urban population.

3.2.5- Recreation/Leisure facilities in the Obala Sub-division

Obala during the past year had an impressive leisure site and was the joy of the locality. The area had a park known as "Luna Park" where we had a number of activities for leisure like swimming, refreshment, and others. But today, that is no longer the case. The park has witnessed a fall in its activities, which right up to this date, no one can really say is the reason for its downfall. Due to this downfall, the population of Obala's leisure time is mostly focused on football matches during days of no work, snacks, and night clubs, which have been rapidly growing in the area during recent years for the youth and for the elderly population, based on sharing time in traditional hurts constructed for the sale of palm wine, which is widely found in the area. The Obala sub-division possesses a good number of football fields, and the town of Obala has one that was constructed in the 1990s. The field today has witnessed some rehabilitation work put in place by the council authorities for the advantage of the population.

Plate 15: The Luna Park site in Obala

Mbukwe 2021

In Plate 15, photo A shows the entrance to "Luna Park" from the plate picture, which immediately shows signs of no activity in the park for a long time. B is a view of the swimming pole, which is now empty and in bad condition. C and D were those of the relaxation space, which was often used by the visitors and those in Obala.

3.3- Urban spatial expansion and economic development of Obala

3.3.1- Favourable climate to economic activities

The Obala subdivision is situated on the southern plateaux of Cameroon, with the humid tropical climate being the dominating one in the zone. Based on its geographical situation, she belongs to the transition equatorial climate (suchel 1988, cited by donation in 2013). During this period of the year, the temperature in the Obala region is constant and sometimes witnesses a slight increase. The annual average temperature is 25 °C, a little bit higher (close to a 2°C increase) than that of Yaounde. During some periods of the year, the temperature level of the subdivision goes right up to 35°C in the dry season and up to 20°C in the rainy season. In terms of precipitation, the Obala station records 1438mm per year, which is slightly lower than the southern region of Cameroon, which averages 1500 to 1600mm per year.The seasonal rainfall classification of the Obala area

- December to February (big dry season)
- March to June (big raining season)
- July to august (small dry season)
- September to November (small raining season)

The good and favourable climate type of Obala has had great importance in the economic sector's activities, especially in agricultural activities. Due to this favourable climate, crops and cash crops like plantain, bananas, and cocoa, which is the most important cash crop cultivated in the area, Today, we find many cocoa companies that have installed in Obala to engage in the activities due to its high yield per year thanks to the favourable climate.

The favourable climate also encourages the installation of migrants and travellers who usually break in the area for pleasure and, at the end, find themselves already installed in the region. The population of Obala today is made up of a high percentage of migrants from different parts of the country and the neighbouring localities who decided to install themselves in the subdivision due to the advantages of the good and favourable climate for agricultural activities.

On one hand, the urban spatial expansion of the area is being made possible thanks to the favourable climate, and on the other hand, the economic development of the sub-division is being made possible thanks to the urban spatial expansion. The fact is due to the increased occupation of land by the migrant population who settle in the sub-division and, in return,

engage in the agricultural sector due to the favourable climate, thus boosting the economic development of the area.

3.3.2- Agricultural activities

One of the most important economic activities in the Obala sub-division is agriculture. The activity occupied 70% of the local population, and even those coming from the neighboring localities turned to it, while the remaining 30% were spread among other activities. The area's being considered as one with a high level of agricultural potential has really been prevented due to the variety of agricultural products we find there. These agricultural activities include farming, fishing, hunting, and animal raring.

The household in question had different activities to cater to their needs. Some are government workers, businessmen, and others who engage in agriculture. Due to the good soil and available land for agriculture, it is considered an important activity by government workers and businessmen. They engage in it as their second job and occupation. They engage in activities like the raring of chickens.

Table 14: Percentage of household according to their sectors of activities

Occupation	**Frequency**	**Percentage %**
Government worker	24	20.7
Traders	23	19.8
Farmer	69	59.5
Total	116	100

Source: Field Work 2020

From table 14, we notice that, considering Obala as an important agricultural zone in the center region, a greater percentage of her population is involved in it. Among the 116 households surveyed based on their daily activities, 24 households (a percentage of 20.7%) represent those working in the government. 23 households (a percentage of 19.8%) are those that are engaged in business activities. The remaining 69 households (a percentage of 59.5%) are those that engage in agricultural activities for their living.

Plate 16: The agricultural institution found in Obala

Mbukwe 2021

Plate 16, made up of pictures A, B, C, and D, shows the campus view of one of the important agricultural intuitions in Obala. The ADAARCAMEROUN (Association pour le Développement Agricole et Agroalimentaire en Zone Rurale au Cameroun) founded the organization in 2002, with the help of local and international non-governmental organizations.The local NGOs, with the agriculture potential of Obala well known to them, supported the institution due to the advantages it would bring to the area. The institution was just an institution in the beginning, but now is a group called IAO GROUPE with the development of a new institution in 2014, ISAGO (Institut supérieur d'agriculture et de gestion d'Obala).

Table 15: Percentage of household engaged in agricultural activities

Agricultural activities	Frequency	Percentage
Farming	63	54.31
Fishing	8	6.90
Animal rearing	39	33.62
Hunting	6	5.17
Total	116	100

Source: field work 2020

Table 16 shows the percentages of the households questioned about their agricultural activities. As a result, it was discovered that a higher proportion of themes are mostly engaged in form (54.31%), which involves the cultivation of crops such as tomato species, as well as the involvement of fruit such as pineapple. Next is animal raring (33.62%) of domestic animals like pigs and chickens. Fishing and hunting involve 6.90% and 5.17%, respectively. This low percentage is due to their practice on a small scale, mostly for home consumption.

3.3.2.1- Farming

The farming method is mostly an artisanal one, which involves the use of local tools like cutlasses and hoes. The agricultural crops are cash crops, food-producing cultivation, and fruit-growing, with an intensive method of cultivation oriented toward commercialization. The cash crop dominated in the area is cacao, which occupied 50 to 60% of the land used for agriculture, while the other food-producing cultivation crops, like groundnut, cassava, maize, yams, and tomatoes, occupied little proportion, with an annual production estimated at 5000 tonnes. Fruit growing involves pineapples, oranges, guavas, and limes.

Table 16: Crops cultivation in hectares in Obala subdivision

Crops produce	Surface area occupied (hectares)
Cacao	900t/hec
Yam	1t/hec
Cassava	1,5t/hec
Maize	2,5t/hec
Tomato	2t/hec

Source: PCD of Obala council 2014

The table shows the crops that have been dominating in the Obala subdivision when it comes to agriculture. Today, most of the farm's produce is sold in neighbouring towns like Yaounde and Douala. Cacao companies, for example, have seen a significant increase in the last year.

Plate 17: Some cocoa company parking stores in Obala

Mbukwe 2021

Plate 17 shows a set of pictures presenting the packing store of some company involved in the cultivation of cocoa in Obala. A and B show the front view entrance of the packing store. C is the inside view of the store in which we see cocoa in the back parked in rows. In recent years,

the agricultural sector has seen a significant number of changes, such as mechanisation, which now includes the use of modern equipment such as tractors.

During the recent years, the agricultural sector has witnesses a high number of changes such as the mechanisation of the sectors which now involved the use of modern equipment such as tractors. The urban spatial expansion of the Obala subdivision in recent years has brought many changes in the sectors of agriculture and forestry. According to the inhabitants of the areas, the effects of urban spatial expansion are both positive and negative. Positive in the sense that, though the surface area for agricultural activity is reducing, new methods have also been introduced which help cultivate a small piece of land but with a high output at the end. The negative effect is simply a reduction in the amount of land available for new built-up areas.

3.3.2.2- Fishing activities

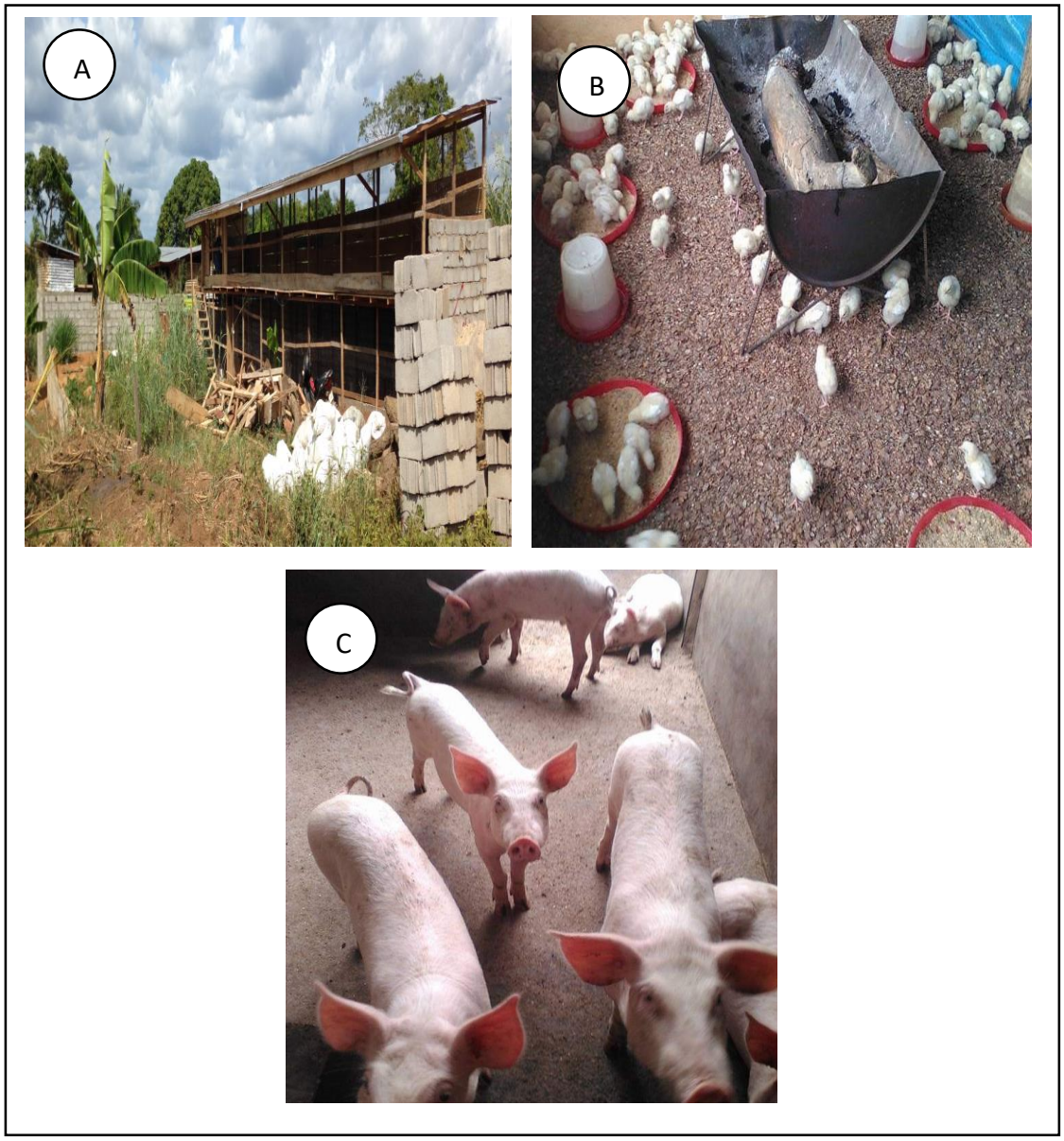
The activities, though practiced on a small scale with the use of local tools, still remain an important economic activity in the Obala subdivision. There are a number of rivers, such as the "Afamba", "Doua", "Mbélé" and "Foulou", which provide a good area for fishing activities to take place. The fish captured, or curt, are mostly tilapia and catfish, which are highly demanded by the local population. Also, in the subdivision, due to the capacity and presence of the refrigerator for the fish curt storage, the activities are still live.

Today, due to a rapid increase in the number of people and the effect of urban spatial expansion, the activities gradually loosen their grip due to the high demand that is increasing every day. This demand pushes the fishermen to overpass the limit and find them self-capturing the little fish that are not mature, thus giving way to scarcity. To overcome this problem of storage, the DEPIA delegation development project, which involves fish farming, so as to conserve the activities.

3.3.2.2- Animal rearing activity

It involves the raring of cheeps, pics, and cattle. It is true that most of the animals raised are not from the Obala subdivision but instead come from other regions, such as the north, west, and other nearby localities. The activity was considered an important source that boosted the economic development of the area after her first position win on picric in the Ebolowa agro-pastoral show. Caws and cattle rearing have led to the creation of the slaughterhouse store due to high demand by the increasing population of the area and the neighbouring towns and localities.

Plate 18: Animals rearing in Obala



Mbukwe 2021

The image on the plate 18 depicts a rare animal owned by someone. A represents the distance between the chicken fences, B represents the close view of the chicken in question, and C represents the view of the pigs being reread by the individuals.

3.3.2.4- Hunting activity

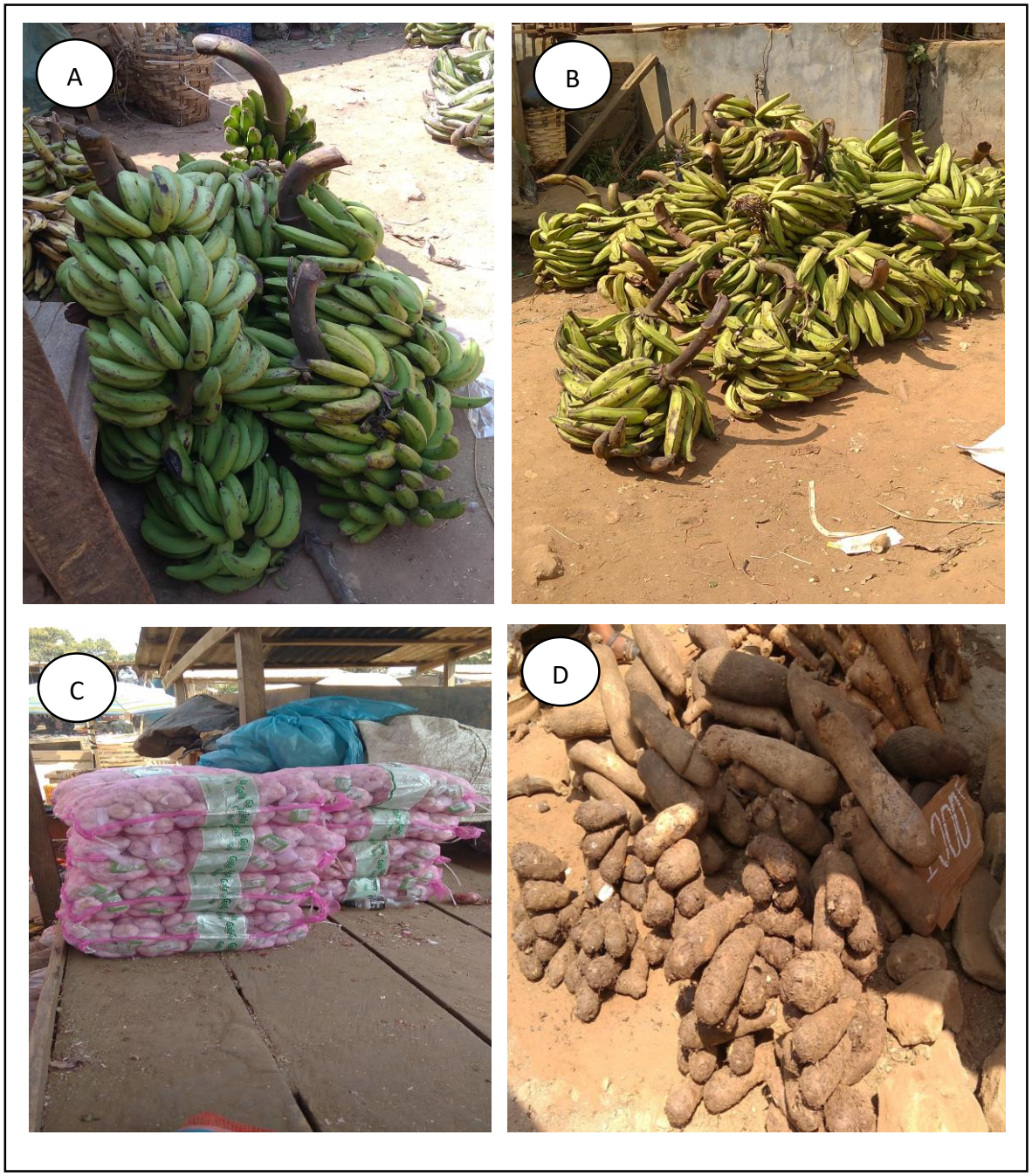
Years ago, since the creation of the Obala subdivision, the activity of hunting was already considered an economic activity. The activity has been done mostly by the local population, who still consider it their main source of income, but have seen it lose its place due to the changes in the subdivision. The urban spatial expansion of the Obala subdivision and the

rapid increase of built-up areas have reduced the land available for hunting and led to the disappearance of some forest species that were highly demanded by the population. Although the changes are affecting hunting activity, it still plays an important role in the economic development of the Obala subdivision.

3.3.3- Commercial activity in Obala

Trade and commerce in Obala have always been an important activity in the area, from the past to the present. The activities have improved greatly in the Obala as compared to the past years when they were done on a small scale, usually making up a lively product for the local population's needs. Today, the case is different. Obala, with the construction of the new market on a very large surface area of 3900m2, has really boosted the activities and is today considered the biggest market in the Lekie division. Obala's trade and commerce activities are characterized by the sale of not only agricultural products like plantains, yams, cocoyam, bananas, and other products exported from other regions to Obala. The other non-agricultural products involve electronic products like TV sets, radios, and household utensils. Buyers and sellers come from neighbouring towns and villages, especially on Saturdays, which is the day when the market is at its full capacity.

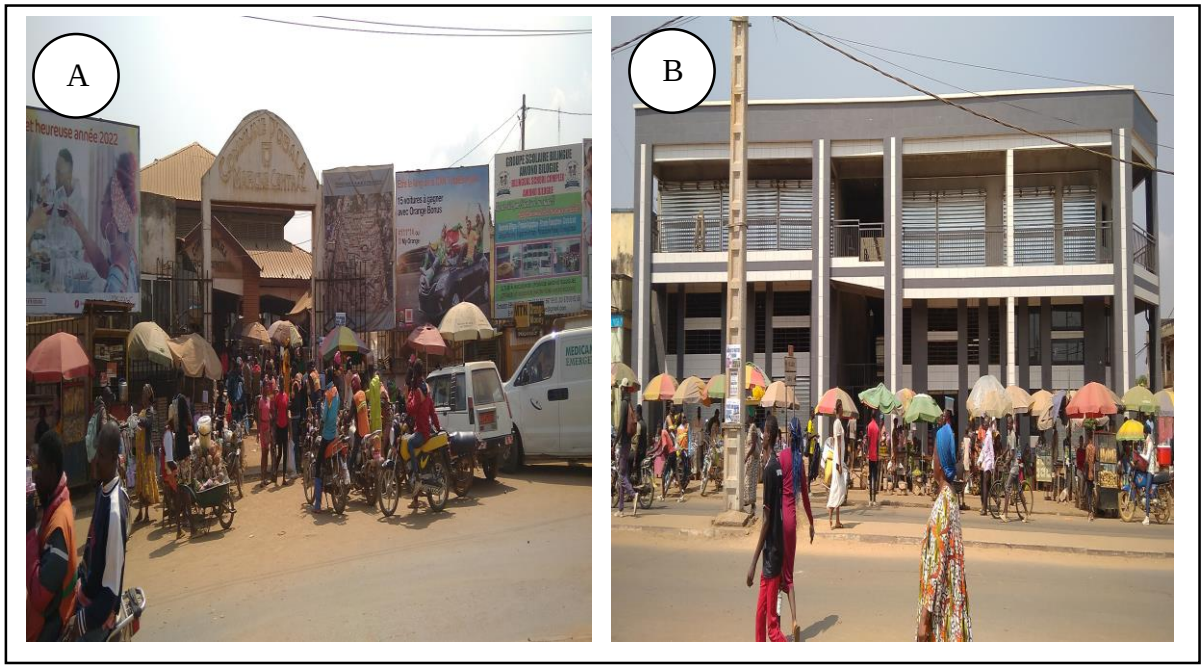
Plate 19: Some commercial farm products found in Obala market



Mbukwe 2021

In Plate 19, photo A shows bananas, B show plantain, C show onions and photo D Shows cassava and yam which are all some of the crops found in Obala market and which are in high demand by the neighbouring towns and localities.

Plate 20: The Obala market new-look



Mbukwe 2021

The photo A and B in plate 20 are those of the entrance of the Obala central market and a building used for commercial activities in rehabilitation in Obala, respectively.

3.3.4- Employment opportunities in the Obala Sub-division

The employment level in Obala is one that is not very fluid. During the 1950s, Obala had a manufacturing industry called CCC (complexe chimique du Cameroun) along the river bank of Foulou. The industry specialised in the fabrication of soap. The structure attracted a very high number of migrants from the neighbouring localities, towns, and event regions during that time. The presence of industry boosted the urban space occupied by these migrants and the inhabitants of Obala too. The economic development of the area during that period was really impressive.

Obala witnessed a fast and rapid increase in her population during that period due to the industry. But in the 1980s, the industry was transferred from Obala to Douala (Bassa) in the littoral region. The cause was that the industry needed a high amount of raw material (palm oil) and water for its good functioning low provision. Obala was not able to provide for such a need even though "Foulou" and "Afamba" provided the water needed, but it was not enough. AES Sonel, the institution responsible for electricity at that time, did not provide enough electricity either. As a result, the industry must be relocated to a location where it can gain access to the

resources it requires to function properly. The transfer of the manufacturing industries rendered the urban space of Obala stagnant right up till the year 2000, when a high number of new activities came up.

After the transfer of the manufacturing industry, this sector was expected to exist in the area. Today, it represents a few forward-thinking jobs such as baking, carpentry, sewing workshops, and other small jobs. The economy of Obala is one that is more regressive.

3.3.4.1- Financial institutions in Obala

The Obala subdivision is made up of some micro-finance agencies and some private financial institutions like Express Union, Express Exchange, and CEPI, which have installed their sub-branches due to the increase in population and the fast influence of urban spatial expansion through the increase in built-up area in the subdivision. The population in need of services has been proposed by the institution to travel to other towns, which exposes them to road accidents. In addition, mobile companies such as MTN and Orange are now involved in the same financial sectors with the introduction of mobile money transfers, which allows most residents to easily manage their money transfers. Employment in Obala is improved by these financial institutions, which offer jobs to the younger population in search of one.

3.3.4.2- Service companies in Obala

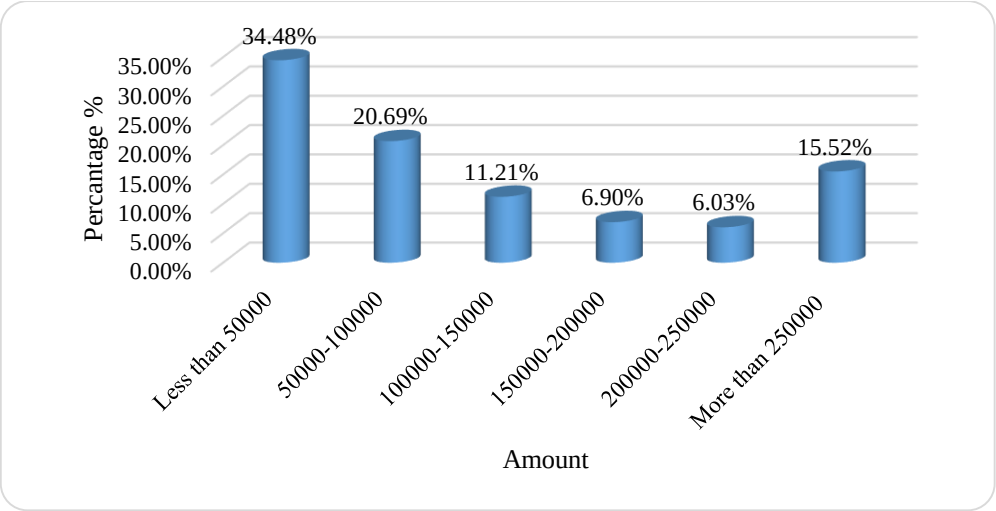
Historically, there has not been a strong presence of service companies in the Obala subdivision. The CAMPOS was the only one present in the subdivision. This offers services like document transfer. Today, we see a rapid increase in the sector with the implantation of mobile service institutions like MTN (mobile telephone network), Orange, and Nextel, who are engaged in the fast growth of the economic sector in the Obala subdivision. They offer communication services to help with the transfer of information by the population.

3.3.4.3- Level of income to the Obala inhabitants

The income level of the Obala population is not really high, though with observation on the field, there is a high rate of infrastructure development that could mislead visitors. According to the number of household questions, a high percentage of the theme relied on agriculture for a living, with a monthly income not exceeding that of the government worker present in Obala.

3.3.4.4- Standard of living in the Obala Sub-division

The local population's standard of living is not as high as expected before the data collection field. Taking into account the rapid increase in the level of economic activity, the supposition was made that the population's standard of living would have been high, but that was not the case. After the questioning and interview, it was noticed that a higher number of the household questions depended on agricultural activities for living, and only the surplus was sent to the market for sale. Also, the earnings per month were not as high as expected (Figure 21).



Source: Fieldwork 2021

Figure 21: Monthly Income of a Household

In the figure above, it is observed that a percentage of 34.48% earn less than 50000FRS per month, which is an important factor in the standard of living of these households. This is attributed to the low rate of employment and the fact that most of the local population lacks the qualified skills to work in some of the institutions established in the area during the past year. Those with revenue varying from 200000FRS to more than 250000FRS are government workers present in the area, that is, teachers, health personnel, and ministerial personnel, whose sub branches are in Obala.

3.3.5- Tourism and leisure in the Obala Sub-division

The subdivision of the Obala, though, witnesses a very low rate of tourists, or even zero visits annually during the year round. With the passing of the Germans in the area in 1923, who left impressive construction that could be used as a museum but has not been maintained, the

town has a rich history. Since the 1978 year in which the infrastructure was left behind by the Germans, it has been abandoned, with no project having been developed for its rehabilitation. What was supposed to be considered as having economic potential today is just an abandoned building.

3.4 - The effect of urban spatial expansion on the social and economic development of the Obala subdivision.

The phenomenon of urban spatial expansion causes many changes in an area, both positive and negative. In the case of our study area, after the observation and implementation of the questionnaire on the number of households living in the area, a percentage of 2% was selected from the number of households per quarter, and we had the following result.

Table 17: Percentage of household sampled on urban spatial expansion

Response	**Number of household**	**Percentage %**
Yes	80	68,97%
No	36	31,03%
Total	116	100

Source; Fieldwork 2021

Based on the table above, of the households that were interviewed in a percentage of 100%, there are 68.97% who prove and confirm the changes that have taken place in the Obala subdivision in the social and economic development of the subdivision. The rest, 31.03%, were on the point that nothing had changed.

The households in the Obala subdivision, based on the change in the socio-economic development of the subdivision as a result of urban spatial expansion, were also concerned with the level of development. The question was to know if the changes were positive or negative, so as to conclude with a heavier point.

Table 18: Level of the changes in the Obala subdivision

Response	**Number of household**	**Percentage %**
Yes	73	62,93%
No	43	37,07%
Total	116	100

Source; Fieldwork 2021

The table above presents the percentage of the household responses based on the socio-economic development level in the Obala subdivision. A percentage of 62.93% was on the point that the development was positive. They supported their point by involving the increase in infrastructure, transport and communication network improvement.

The set of the 37.07% though urban spatial expansion brought changes, but the changes are negative due to the problem. They brought up things like lack of infrastructure in the newly built-up area development, the road like the peripheries quarters and the newly created one, being of poor nature, the lack of social amenities such as clean portable water for drinking, the lack of electricity in the new quarters, and the persistence of electricity seizure in the subdivision as a whole.

The above analyses of the changes in the subdivision and the level of socio-economic development were also based on the region of origin of the household. There was a need to find out if those supporting the two points discussed above are native to the subdivision.

Table 19: Percentage of childbirth in the Obala sub-division

Place of birth	**Number of household**	**Percentage %**
Obala subdivision	79	68,1%
Out of Obala subdivision	37	31,9%

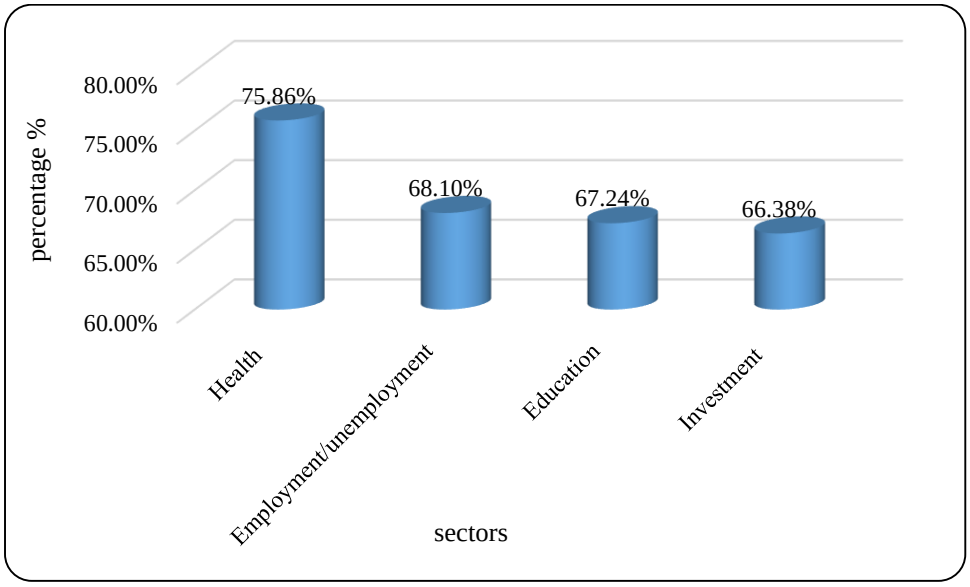
Source; Fieldwork 2021

From the result of the data analysis of the responses given by the 116 households questioned above, the households that were born in the subdivision However, 68.1% of the theme supported the fact that the urban spatial expansion of the Obala subdivision has brought many changes, and the changes are positive.

3.5 - Sectors affected by the urban spatial expansion in the Obala Sub-division

The different sectors affected by the urban spatial expansion are those of great importance to the social and economic development of the Obala subdivision. Taking the views and opinions of the 116 households interviewed, we proposed different sectors. That is, health, employment and unemployment, education, and investment sectors. From the figure below, which illustrates the percentage proportion that each sector occupies in the subdivision, we also have an idea of the sector which has had the greatest influence from the urban spatial expansion

of the Obala subdivision over the time period chosen for the research work. Due to some analysis with data gotten, the following statistics were brought out.



Source: Fieldwork 2021

Figure 22: Sectors of activities been affected in Obala subdivision

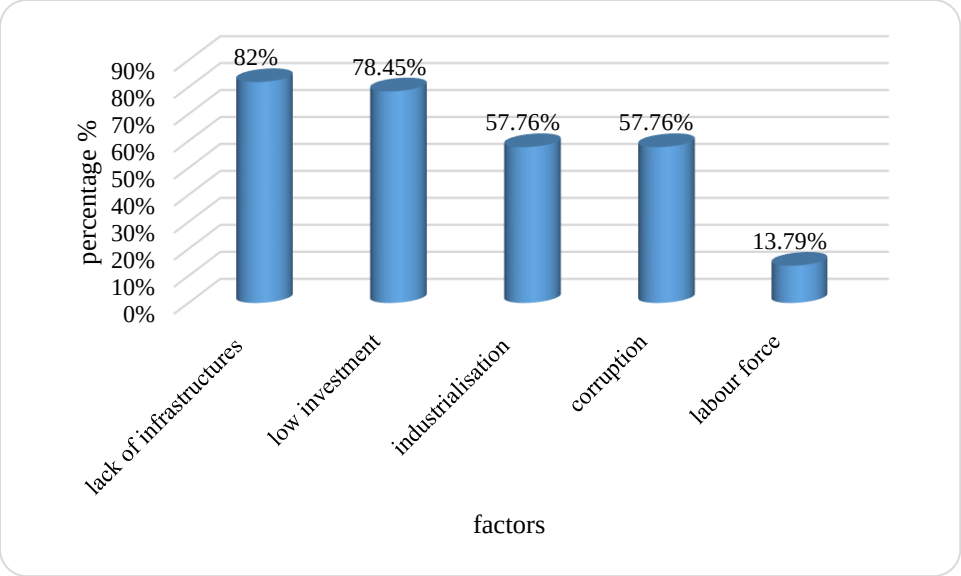
From the figures above, based on the statistics, health counts for 75.86%, 68.10% for employment/unemployment, 67.24% for education sectors, and 66.38% for investment sectors. With the above statistics, it is obvious that all the sectors have been greatly affected by the urban spatial expansion of the Obala subdivision. Of all the sectors, the health sector is the one being greatly affected as compared to the other sectors.

3.6 - Factors affecting the sectors positively and negatively

In general, we know that when an area witnesses changes in its physical milieu, there are positive and negative effects that affect the development of the area in question. Taking the situation of the Obala subdivision, the field for the collection of data so as to help evaluate the rate of development after the effect of the urban spatial expansion that has taken place in the subdivision, With the elaboration of questionnaires and semi-interviews, which were proposed to 2% of the households per quarter in the town of Obala, we succeeded in obtaining factors affecting the subdivision both positively and negatively. We proposed a set of factors which, after consultation of past work, have been carried out on other areas in the world and Cameroon in particular. The set of factors for the negative effect analysis were: lack of infrastructure, low investment, industrialisation, corruption and labour force. Positive factors included the

availability of labor, the level of commercial activity, the gross domestic product (GDP), the population's high income level, and the level of industrialization.

The statistical analysis helps us to bring out the number of each household in question and the percentage of those who were in support of each of the factors listed and proposed to them. The below figures show more information on the negative factors that affected the socioeconomic development of the Obala subdivision.

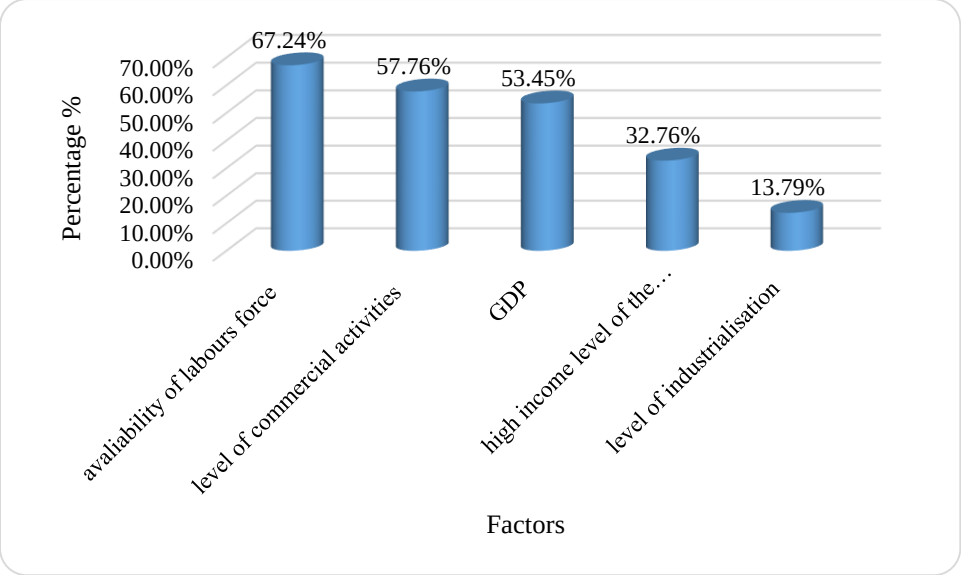


Source: Fieldwork 2021

Figure 23: Negative factors rate of effect on the sectors influencing urban spatial expansion

From the figure above, in the Obala subdivision, despite the changes influenced by urban spatial expansion, we notice a slow rate of socioeconomic development being negatively affected by factors like lack of infrastructure, low investment, industrialization, and corruption. The labor force has no significant influence on socioeconomic development and accumulates a percentage of 13%, far lower than that of the other factors. From the 116 households, each of the following factors was proposed to each household interviewed and questioned. 95 out of the 116 households, which is a percentage of 81.9%, said the low socioeconomic development is caused by the lack of infrastructure. Doing the same for the other factors, the result was as follows: Low investment, 91 out of the 116 households, that is a percentage of 78.45%; industrialisation, 67 out of 116 households, that is a percentage of 57.76%; corruption, 67 out of 116 households, that is a percentage of 57.76%.

On the other hand, we also succeeded in having information on the factors that have been affecting socioeconomic development positively. The figure below gives detailed statistical information on the factors.



Source: Fieldwork 2021

Figure 24: Positive factors rate of effect on the sectors influencing urban spatial expansion

The above graph shows that the level of industrialisation has little or no effect on socioeconomic development. With a percentage of 13.79%, the level of industrialisation, which is an important factor in the development of a region, in the subdivision of Obala is very low. With regard to the other factors, with regard to their percentages, we see they have a high effect on the socioeconomic development of the Obala subdivision. The first of which is the availability of a labour force with a percentage of 67.24%, followed by the level of commercial activities, which is 57.76%, and the gross domestic product, which is 53.45%. These are the factors that help in socioeconomic development. The high income level of the population and the level of industrialisation with a percentage lower than 50% were considered important factors contributing to the socioeconomic development of a region.

3.7- Sustainable development of the Obala subdivision

The sustainable development of the Obala subdivision is based on certain factors. During the field observation, a certain number of factors were observed, and a questionnaire was mounted with a set of proposed factors to ask the household to be questioned. The table below shows the number of households for the different factors proposed.

Table 20: Factors favouring sustainable development in Obala subdivision

Factors	Household			Percentage %		
	Yes	No	Total	yes	No	Total
Improvement in education	62	54	116	53.45	46.55	100
Improvement in health	60	56	116	51.72	48.28	100
Improvement in water supply and sanitation	50	66	116	43.1	56.9	100
Level of urbanisation	30	86	116	25.86	74.14	100

Source: Fieldwork 2021

From the results gotten from the field and on the table, we see the factors that really characterize the sustainable development situation of Obala. We see that the improvement in education, health, water supply and sanitation are determinant factors in the sustainable development in Obala. The level of urbanisation, with a percentage of 25.86% of those saying it plays a role and 74.14% of those saying it does not, determines the Obala's sustainable development.

3.7.1- The local actors involve in the sustainable development of Obala

The local actors involved in the sustainable development of Obala are the population themselves, through their exploitation of the natural resources for their socio-economic development. According to observations made on the field, the majority of the inhabitants are engaged in commercial activities, with only a few engaged in natural resource extraction.This shows that the population is not too dependent on natural resources for its development, even though a smaller proportion exploits the resources.

Following the result, among the 116 households interviewed, 79 households, equivalent to 68.1%, confirm to us that, after their observation and the long time they have been in the area, Obala sub-division is witnessing sustainable development. The remaining 37 households, equivalent to 31.9% percent, were not in support of the point that the sub-division is developing sustainably.

3.8- Conclusion

This chapter's aim is to present the rate of socio-economic development and changes it has witnessed due to the urban spatial expansion of the past and recent years. From the analyses carried out from the data available and the questions and interviews carried out, it was possible to produce the following result: The findings show that the effects of urban spatial expansion on socioeconomic development are concentrated in specific sectors of activity.In the social domain, the standard of living is considerably lower, but in the health care and education sectors, the sub-division has had positive changes with the increase in the number of infrastructure in the various quarters at the peripheries, which were not available in the past. The increase and construction of new health and educational facilities have been helping the rapidly increasing population over the past years. In terms of economic development, the influences are impressive. Obala today possesses impressive infrastructure both in the agricultural sector and the banking and commercial activities that were not present. The unemployment and employment rates are balancing with the investment rate increasing, especially in the agricultural sector, which is the one dominating in the region. With these findings, it is obvious that urban spatial expansion influences socio-economic development.

CHAPTER 4: CONSTRAINTS OF URBAN SPATIAL EXPANSION TO THE SOCIO-ECONOMIC DEVELOPMENT OF OBALA SUB-DIVISION

4.1- Introduction

There is a relationship between urban spatial expansion and settlement, land tenure conflict, insecurity, and pollution. The focus of this chapter is to show the constraint of urban spatial expansion on the socio-economic development of Obala. These constraints will be explained in the section below.

4.2- Urban spatial expansion and unplanned settlement in the Obala sub-division

The urban spatial expansion in Obala is noted to be rapid. Observations made in the field show that the settlement manner in Obala is not as it was to be. Only one quarter in Obala town has been planned for settlement in recent years, and the quarter in question is one of the town's oldest quarters. It was discovered that the sub-division in general, and the town of Obala in particular, were characterised by unplanned settlement throughout almost the entire area.

The urbanisation of cities in developing countries frequently suffers from insufficient planning and management. High development pressure and insufficient supply mechanisms of affordable land are causing the growth of unplanned areas, often coinciding with deprived areas. Thus, localising such areas, as well as understanding their heterogeneity and development dynamics, is not only a major global concern but also a challenge for local authorities. Many cities in developing countries have large areas of unplanned development, which can exceed the amount planned. Obala is observed to be different, though being an urban city.

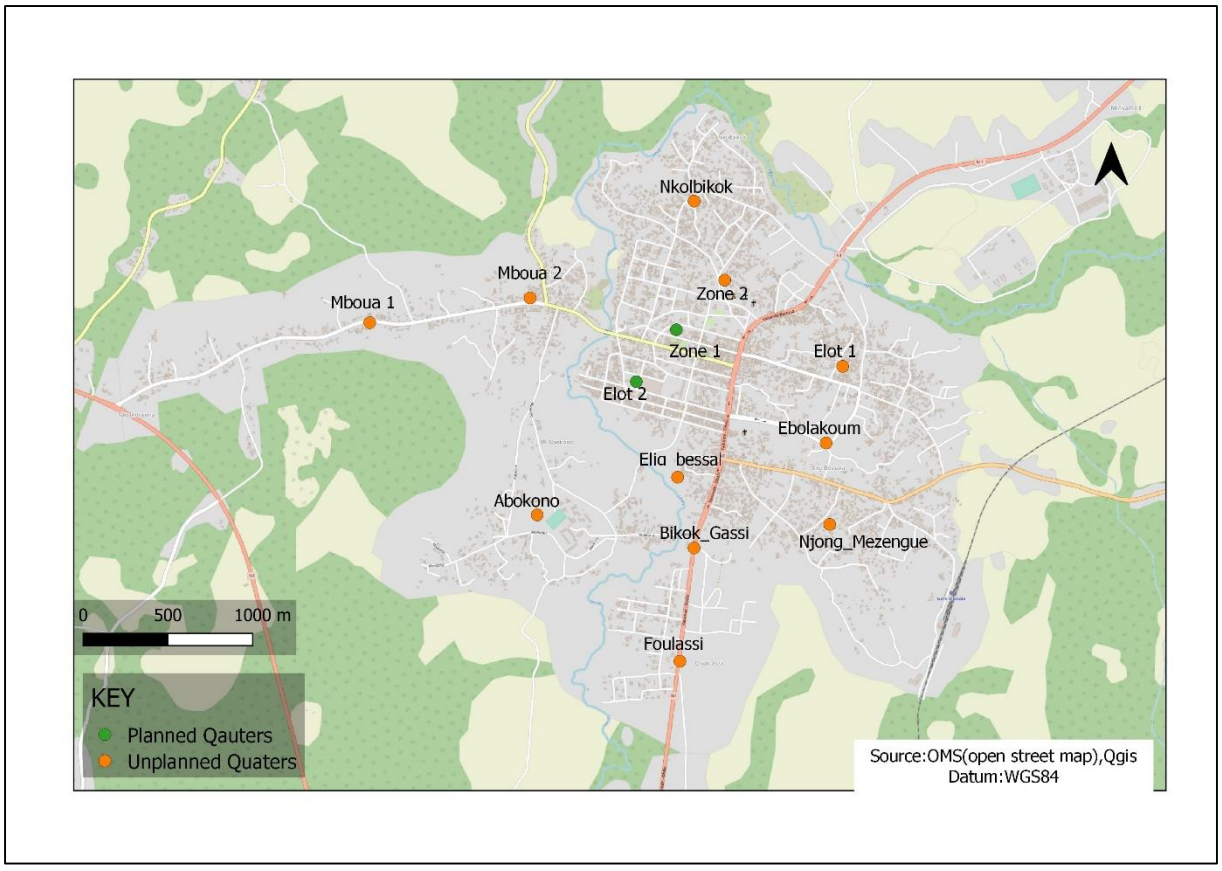
4.2.1- Unplanned settlement in Obala Sub-division

The urban spatial expansion process taking place in any area or place in the world is usually related to settlement types, that is, planned or unplanned settlements. Obala town, from its origin, did not have well planned quarters, but with the nomination of the sub-division as headquarters in the Lekie division in the year 1967. There was the development of one quarter well planned (Figure 25).

Later, most of the other quarters did not have that change as it was not easy for the local authorities to take action due to fast growing population and the demand for land for settlement by this population. This affects the rapid spatial expansion of the area. Today, most of the new quarters created are not planned, and there is an increase in unplanned settlements (figure 25).

In the pattern of unplanned settlements, settlements instead follow the location of the existing network of infrastructure facilities. For example, linear settlements are settlements that grow following the flow of a river or the main road. The description pattern of unplanned

settlement is like the organic pattern type (V Novitasari et al. 2021). "Organic pattern type is the settlement of life and natural forms. Here it is the passage of time that determines man's order. "Organic forms attach importance to the process rather than the product. How these settlements are formed is attached to the process of community formation, the unity between individual needs and common will. The organic settlement, as a biological process, considers the process of constructing city space to be a living being that is never at rest. The form of organic settlements occurs in trading cities formed due to the process of supply-demand interaction. Organic patterns are organisms that develop according to cultural and social values in their society and usually develop over time without planning. This organic pattern changes spontaneously, and the shape follows the condition of the existing topography. The nature of this organic pattern is flexible; it's not about the physical; it's usually in the form of curved lines, and in the development of society it plays a large role in determining the shape of the city. In contrast to the grid shapes and diagrams, which are usually determined by the ruler of the city (Kostof, 1991)".



Source: Mbukwe modification from OMS (open street map)

Figure 25: planned and unplanned quarters settlement in Obala town

From the figure, the only area in Obala where we see an example of a planned settlement is the quarter of Elot 2 (today call the Bamileke quarter). It dated back as far as the 1970s when the area was nominated as the headquarters of the Lekie Division.

4.2.2- Characteristic of unplanned settlement in Obala sub-division

The unplanned settlement in Obala during the past decade is based on certain elements or characteristics which are typical examples found in some areas in the world; that is, rural-urban migration, lack of affordable housing, weak governance (planning and urban management), marginalisation, and population growth. The ones that were found in the area are rural-urban migration, weak governance (planning and urban management), and population growth. These characteristics are visible on the field after the interaction made with some of the inhabitants in the area.

These characteristics noted in the Obala sub-division are closely related, and it is the negligence of one that provokes the other. Taking the first, which is that of weak governance (planning and urban management), the Obala authorities in charge of urban planning and control do not take an active part in the process effectively based on some interviews carried out with some of the inhabitants. This weak governance, in relation to the rapid population growth, made most of the population decide on the area they saw as suitable for them without trying to consult the local authorities in charge of urban planning in the Obala sub-division.

The unplanned settlement areas are those located on the country's periphery, expanding toward the highway leading to the political capital, Yaounde, based on the fact that most are migrants, and with the rural-urban exodus going on in the area. This is due to the fact that most of the rapidly growing population who have settled in these areas are those who carry out their daily activities in the political capital, considering its location, which is just about some 40km away with a maximum of 45m of travel.

4.2.3- Factors of unplanned settlement in Obala sub-division

In the Obala sub-division, it was noticed in the field that the factors responsible for the unplanned settlement were different from the others. Taking into account the fact that the area in question is found in the developing world, it is obvious that the factors will be different. The factors noted and observed during the fieldwork are society, population, and topography.

The topography of Obala is characterised by a flat surface, and the highest point is at a height of 900m above sea level. The unplanned settlements are usually located in strategic locations that are around transportation nodes such as river flows or main road lines, and they

form a linear form of settlement (V Novitasari et al. 2021). Taking the authors' view into account related to the Obala sub-division, there are two main rivers surrounding the town, and the settlement is found in-between them. With a close look, it is obvious that the unplanned settlement is attributed to the position of the rivers.

Unplanned settlements were set up by traders from several corners of the world as well as ethnicities. So it has a different socio-cultural and economic situation. However, this difference makes them adhere to plurality so that they are accustomed to differences (V. Novitasari et al. 2021). Taking this point of view as an important factor for unplanned settlement, most of the areas witnessing unplanned settlement are inhabited by mostly migrants who find it difficult to integrate with each other due to cultural differences.

In society (that of Obala in particular), unplanned settlements are formed due to supply and demand from strategic locations such as trading cities. The social life of these unplanned settlements is also shaped by a plurality composed of various ethnicities and cultures without the establishment of an autocratic hierarchy (V Novitasari et al. 2021).

4.3- Urban spatial expansion and land tenure conflicts in the Obala sub-division

The word tenure comes from the Latin "tenere", which means to hold. Land tenure refers to the holding of land under a certain condition. Aduayi and Ekong (1981) defined land tenure as the pattern of ownership, control, and use of land and land resources prevalent in a given society. Therefore, land is held under different conditions, which greatly vary from one society to another.

The land tenure system in Cameroon is based on state law, which is to be respected by all. Given that all land in Cameroon belongs to the state, anyone claiming to be the owner of one should have a land title issued by the authorities in charge. In Obala, land is mostly owned by the local population, who have inherited it from their grandparents. In the field during data collection, it was noticed that most of the local population who owned land did not have land title. It is true that Obala is a small town growing at a faster rate as compared to others, but the manner of land acquisition still follows the traditional ways.

4.3.1- Land tenure conflict in Obala

A land tenure conflict is considered a problem between two or more individuals claiming ownership of a piece of land. The recent expansion of Obala, as well as the rapid flow of migrants from other regions and localities with plans to settle in Obala, has resulted in a high

demand for land. This high demand has influenced the conflict over land tenure and ownership in the area, as most of these landowners want to make more money when selling their lands, causing conflict with one another.

According to the response gotten from the household during the interview carried out, a good number of them reveal that land selling in Obala is not done legally by some individuals, and at times you find more than four individuals on one piece of land, each claiming it belongs to them. Most of this is simply due to profit maximisation by the seller on one hand and, on the other hand, two members of the same family claiming the land as their own and selling it to different individuals without the concern of anyone.

4.3.2- Causes of land conflict

Generally, land tenure conflict arises when there is land scarcity, insecurity of tenure, or grievances (long-standing reassessment). In Obala, the problem of land tenure conflict has been one that has existed since the creation of the area as a sub-division in Leke. In recent years, the issue of land tenure conflict has been felt more and more as compared to the past, with the effect of urban spatial expansion, the rapid increase in the population, and the migrant flow into the area over recent years.

4.4- urban spatial expansion and insecurity in the Obala sub-division

Insecurity is something we find everywhere, mostly in big cities and metropolises. Small towns are not left out. An attack refers to a situation where one is attacked by an individual or group of people at his residence or on the street, which is accompanied by the seizure of material and personal properties.

4.4.1- security unit in Obala

Obala has a well-constructed police station and a gendarmerie station, which were constructed so as to fight against the insecurity growing in the area. It is true that the construction of these security units has helped reduce the level of insecurity in Obala, but not all of the population is satisfied. Some of the residents on the outskirts of the area experience frequent security issues such as aggression.

There has been the presence of the Presidential Guard in camp in Obala for years now, but their aim is not to intervene in the security activities in Obala. But recently, due to the rise

of this crisis, when the police and the gendarmerie unit are in need of help due to their smaller numbers, the presidential guard assists them from time to time.

4.4.2- Causes of the insecurity

The causes of the insecurity in Obala are not the same as those of other areas, but we could find more of these causes that are related to some.

4.4.2.1- Abandoned constructions

Obala is witnessing a rapid spatial expansion with a rapid increase in the number of people who are in need of houses and land for settlement, but at the peripheries of quarters. Due to this expansion, some individuals engaged themselves in the construction of houses so as to rent them to the increasing population and the migrants in search of houses. Due to personal and financial problems, these individuals involved in the construction of these houses are unable to complete them, and thus the houses are abandoned for some period. This situation opens the way to rubber and insecurity in these areas as some dangerous individuals using rubber as their job use it as their hideout.

Plate 21: Abandoned houses

Source: Mbukwe 2021

The plate, consisting of pictures A and B show areas being used by these dangerous individuals. In A, we see an abandoned apartment under construction, which has been abandoned for years now. Even though it looked new, the population testified that it has been like that for years. Picture B shows a bushy environment that often serves as a hideout for

armed robbers who hide inside during the night and attack the population using the street late at night.

4.4.2.2- Lack of streetlight

In Obala, during the data collection in the field, it was noticed most of the quarter's lack of streetlights. It is true that some individuals have tried to put some in front of the houses, especially those living beside the roads, but they have oriented them toward their houses.

4.4.2.3- Presence of many ethnics groups

Obala has a number of migrants of different ethnic backgrounds who have established themselves in the area for many years now. Each of these groups has different characteristics and behaviours that don't really interact with each other. Recently, there has been a large period of conflict between the migrants from the north and the natives of Obala. This conflict generated an atmosphere of insecurity with roads and activities blocked for a day without the intervention of the security unit assisted by the presidential guard. It would have led to the loss of many lives.

4.4.3- Population establishment at the peripheries

With the rapid creation of new quarters at the periphery of Obala, most of the population during their establishment in these outskirt areas don't take into account the problem of insecurity, but instead their aim is just getting to settle. They have established that they realise the area where they are is insecure for them as they find no street light.

4.4.4- Population attitude toward the insecurity in Obala

The local population of Obala, due to the increasing nature of the insecurity, has lodged complaints with the police unit and gendarmerie unit. While observing the lack of interest, they decided to take the law into their own hands.

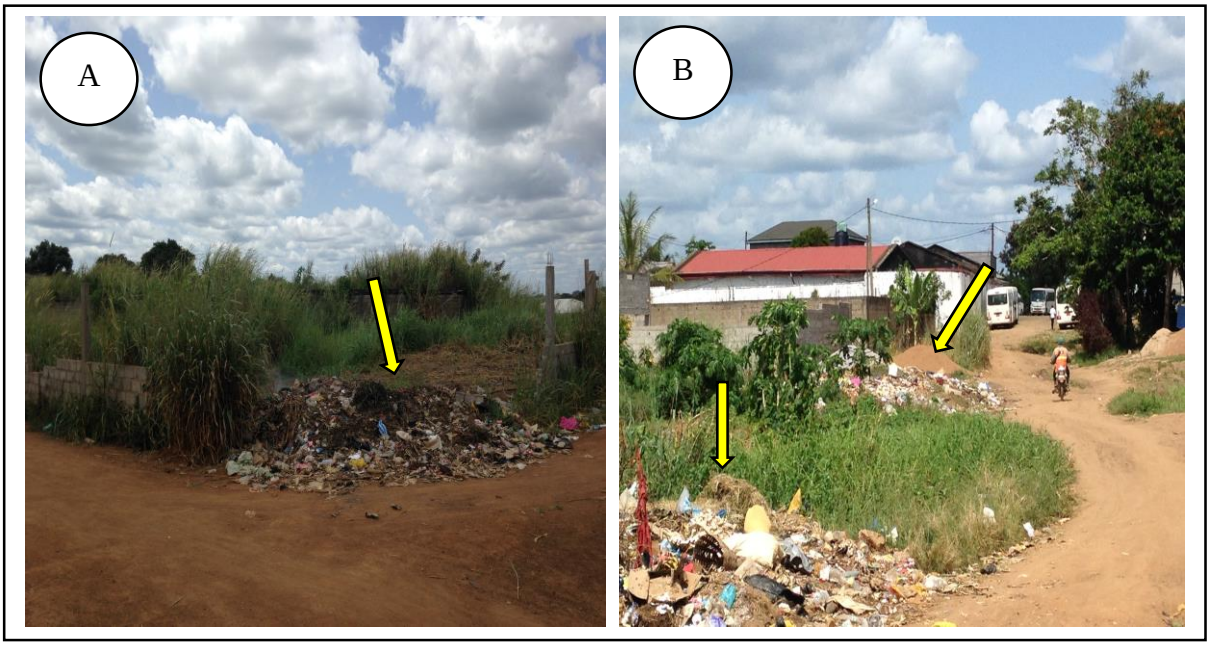
4.5- urban spatial expansion and pollution in the Obala sub-division

In general, when an area witnesses urban expansion, it is accompanied by the development of different and new activities. Some of these are accompanied by excises, which lead to the generation of pollution activities in the area in question. Taking the example of the economic capital in Cameroon (Douala), which is characterised by myriad forms of pollution such as air, environmental and noise pollution, And this can be attributed to its size; rapid urban

expansion, which led to the creation of new activities; and its geographical position on the coast of Cameroon.

Obala is a satellite town of Yaounde. The pollution types being observed in Obala are those of environmental and air pollution. During the field data collection in most of the quarters visited, it was observed that dirt was deposited everywhere in stock where bushy areas were found. Having interviewed some of the inhabitants in these quarters, most complain that the council is reluctant to elaborate on means of dirt collection in Obala. By trying to find out how this dirt finds itself in such areas, it was said that "when one person deposits his dirt in a bush area, the other follows the act, thus creating a waste disposal point which is not supposed to be there".

Plate 22: Indiscriminate waste disposal in Obala



Source: Mbukwe 2021

Consists of pictures A and B, we observe some dirt disposal by the population in areas not recommended by the council of Obala. It is clearly seen that the Obala lacks a sanitation unit that is responsible for the dirt collection and treatment.

4.6- conclusion

In a nutshell, this chapter aims to show the effect of urban spatial expansion on the different activities, namely pollution, land tenure conflict, insecurity, and unplanned settlement. It was observed that most of the activities were already found in the area over the past years. Pollution, insecurity, and land tenure conflict are not new in the area, so the expansion rate just

contributed to an increase in the past years. On the other hand, urban spatial expansion has greatly influenced the development of unplanned settlements in the area right up to date.

GENERAL CONCLUSION

1- Summary of the findings

The research work constituted the findings of answer to a series of question ask and objectives to attain so as to verify the hypothesis which were brought up. Focusing on the specific objectives made of three in number that is;

Specific objective 1 “To determine the rate of urban expansion in the Obala subdivision”. To attain this objective the first step was based on the series of analyse done on the Landsat images (1987, 2004 and 20202). It was notice the built-up area in 1987 occupies 7.01%, in 2004 occupied 9.19% and in 2020 occupied 16.31% of the total surface area of the subdivision. Furthermore following the observation and interview with the household it was notice that the area during the past years has had an increase in the number impressive infrastructure especially at the peripheries were no one existed. Observing the increase in built-up area and the rapid infrastructural development is it obvious the urban expansion is rapid.

Specific objective 2 “To identify the factors responsible for the expansion of Obala subdivision”. Attaining this objectives was through the elaboration of questionnaire for the household supported with interview and observation. The findings reveals that the factors which have more influence on the urban spatial expansion are, the population growth, migration and land acquisition which have high percentage following the household respondent That is, 85.3%, 78.4% and 60.3% respectively (table 10).

The specific objective 3 “To show the influence of urban expansion on the socio-economic development of Obala”. For these to be attain, questionnaire was use to have data for analyses, interview and observation were done of the field. At the end the research work findings reveals that the urban expansion is influencing the socio-economic development in both the negative and positive ways. But the influence is more on the positive way, with the rapid increase in social amenities and the development and creation of new health and educational infrastructure in the area. Also the expansion influences the area with the development of new economic activities introduce by the migrants and local population.

The specific objective 4 “To show that the urban spatial expansion has some constraints in the socio-economic development of Obala sub-division”. For the objective to be attain, a series of interview and observation was made throughout the field data collection. The observation and the interview help to come out with the result that, land tenure conflict and the unplanned problems been face by the area has been influences by the rapid expansion of the area.

2- Conclusion

The research topic was entitled "urban spatial expansion and socio-economic development of the Obala sub-division". The study sought to find out how the urban spatial development of Obala has been taking place for the past years, its causes, factors, and effects on the social and economic development of the area in question.

The study was divided into a general introduction and three chapters corresponding to the three specific research questions, objectives and hypothesis, respectively, and a general conclusion and recommendations. Chapter 1 presented the urban spatial expansion rate of the Obala sub-division, Chapter 2 the factors influencing the urban spatial expansion, and Chapter 3 the effect of the expansion on the social and economic development of the Obala sub-division.

Related literature was classified from general to specific issues. In this case, literature was structured to correspond to the specific questions in order to understand the phenomenon of urban spatial expansion taking place, the factors involved and their actors, and the influence on other activities, as it is in our case, that is, on social and economic development.

Concepts were operationalized and theories were used in this study to better understand the subject matter. The concepts include the concept of urban spatial expansion and socio-economic development. The theory of socio-spatial re-composition encompasses the theories of economic development, social development, and socio-spatial re-composition. A methodology was developed to carry out the research. This work within the conceptual and theoretical framework.

The methodology adopted for this work included the use of primary and secondary sources of data. The primary source consisted of carrying out a series of field trips in the study area. The methods for data collection, such as observation, administration of questionnaires, field surveys, fieldwork, and interviews, were used. The tools included an interview guide and questionnaires. Questionnaires were structured according to the hypotheses. These questionnaires were intended only for the households of the different quarters of Obala Town. A total of 116 households were targeted for the questioning based on the research topic. Secondary sources included the use of published and unpublished documents. The data collected was processed and analysed using statistical, textual, and iconographic tools, giving the following results:

Chapter 1, which discusses the urban spatial expansion rate of the Obala sub-division, takes its approximate closeness to the city of Yaounde. The chapter brings out the results to verify the hypothesis number 1, which is "The rate of urban expansion of the Obala sub-division is rapid." To answer this hypothesis, a number of data collections, map analyses, and graphs were put forward. On tables 2, 3 and 4, the rate of increase of the built-up which portraits the urban expansion rate of the Obala sub-division is seen. The development of figures to put more clearance as a result of the rapid expansion rate of Obala is also seen in figures 5, 7, and 9.

Chapter 2 is set to answer the hypothesis number 2, "Population growth and in-migration are responsible for the expansion of the Obala sub-division." The field observation, the questionnaire administration, and the data analysis proved that the hypothesis was confirmed. But adding to the two factors are a number of other factors which also influence the rate of expansion of Obala. Table 8 shows a clear and detailed answer to the hypothesis number 2 of the research work.

Chapter 3, whose aim was to analyse the hypothesis number 3, "Spatial expansion has greatly influenced socio-economic development of the Obala sub-division." The data proved that urban expansion has been and is still affecting the social and economic development of the town, but not as it was expected to. Obala's social and economic development has changed over the past years, but the changes are not that enormous. And this is attributed to the closeness of the area to the city of Yaounde as a satellite town.

Chapter 4, whose aim was to analyse the hypothesis number 4, “urban spatial expansion has caused unplanned settlement and land tenure conflict in the Obala sub-division”. Form the data gotten form the area, it was confirmed that the land tenure conflict and the unplanned settlement though were present in the area during the past years. To this two the aspect of insecurity is one been taking place in the area and is greatly influence by the expansion rate as well.

To add, following the hypothesis enumerated and the results obtained from the field after data collection and analysis, the urban spatial expansion of the Obala sub-division is really rapid. And the factors responsible are proven to be correct due to their final result and the explanation that accompanied them.

3- Recommendations

The recommendation focuses on the local population of Obala, the mayor and the local authorities, including local NGOs who work on the improvement of Obala's socio-economic development. After having examined the issues involved in urban spatial expansion and the socio-economic development of Obala, it is necessary to adopt measures that have to be effective through joint efforts by the state, local authorities, the local population, and the local NGOs present in Obala to redress the problem inherent. In this light, the following recommendations are hereby suggested:

3.1. To the local council authority of Obala

This part focuses on the local authorities. After the examination of the results gotten from the rate of urban expansion, it was noticed that the Obala urban area, though witnessing urban expansion, is accompanied by unplanned urban structures, which during a number of years may cause some problems for the area. For the problems to be avoided, it would be wise for the local authority to provide the urban planning made by the council available for the location. This will allow the population to avoid haphazard construction as it was seen in the field.

In the economic sector, considering the high agricultural potential of the Obala sub-division, it would be wise for them to look for modern methods of agriculture and transform agriculture into a mechanised one. Is it true that some private individuals have already been doing great work on the mechanisation system of agriculture, but it is still not really important at the regional level? It will also be advised to rehabilitate the Luna Park, which was very important due to the impact it had on the economy of Obala with the presence of a high number of visitors from the surrounding localities and towns.

The authorities and the council should work in collaboration with the CAMWATER institution branch present in Obala on how to increase the quality of portable water for the population. Obala, though having the presence of institutions like CAMWATER that provide portable drinking water, complains of its poor quality, which forces them to rely on drilling water for drinking.

3.2. The population of Obala

The population of Obala during recent years has greatly increased at a rapid rate. And this population has really influenced the expansion of the area through their relocation to the

peripheries of the urban area, with the construction of very impressive infrastructure and the creation of some activities. It is true that they play a good role in the area, but at the same time they create some problems, like unplanned settlement.

The population of Obala, due to its large number, which provides the labour force needed for agricultural activities, should add more concentration since it is the important source that boosts the economic potential of the region.

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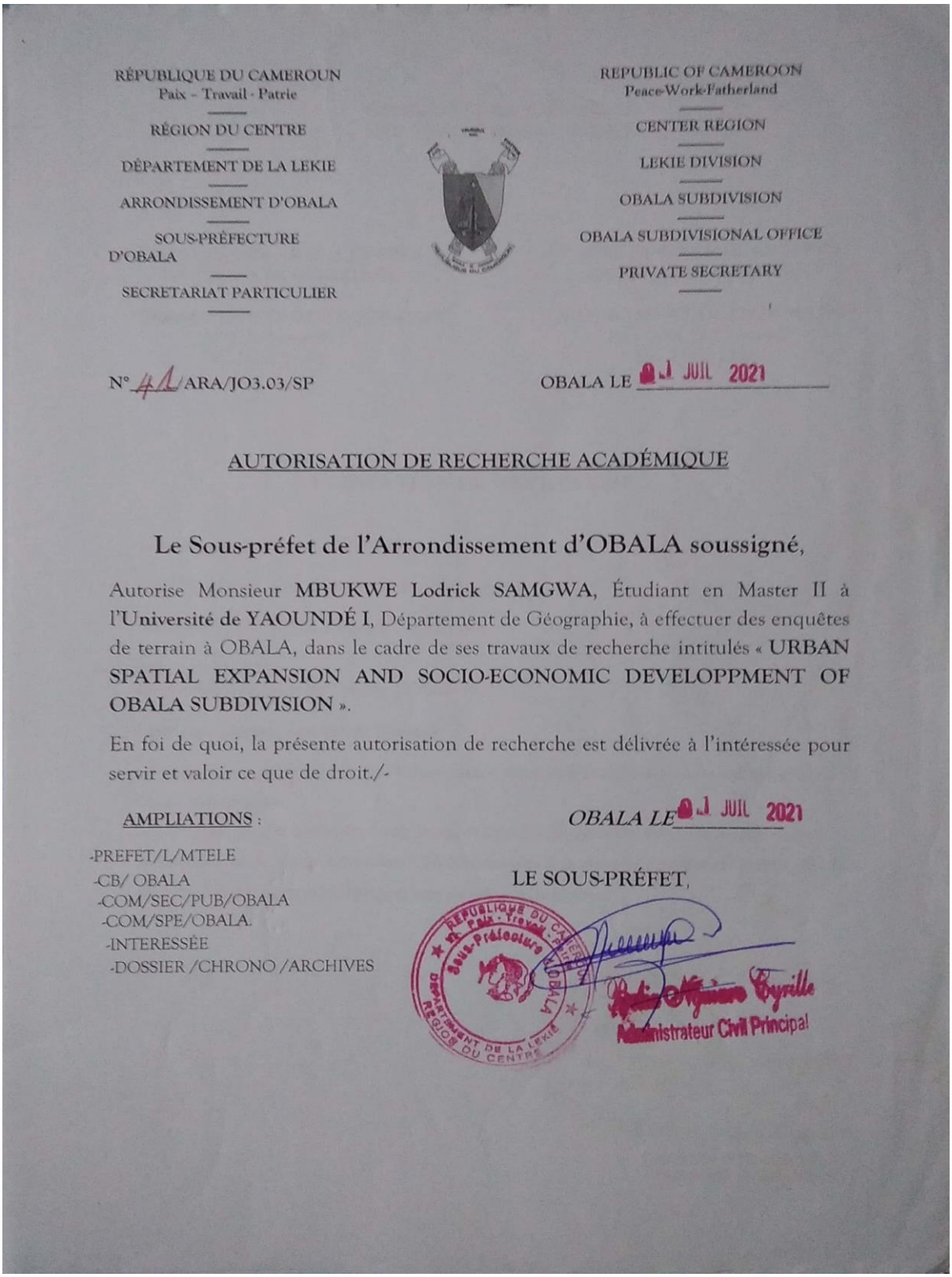
ANNEX

a- Research authorisation



RÉPUBLIQUE DU CAMEROUN
Paix – Travail - Patrie

RÉGION DU CENTRE

DÉPARTEMENT DE LA LEKIE

ARRONDISSEMENT D'OBALA

SOUS-PRÉFECTURE
D'OBALA

SECRETARIAT PARTICULIER

REPUBLIC OF CAMEROON
Peace-Work-Fatherland

CENTER REGION

LEKIE DIVISION

OBALA SUBDIVISION

OBALA SUBDIVISIONAL OFFICE

PRIVATE SECRETARY

N° 41/ARA/JO3.03/SP

OBALA LE 01 JUIL 2021

AUTORISATION DE RECHERCHE ACADÉMIQUE

Le Sous-préfet de l'Arrondissement d'OBALA soussigné,

Autorise Monsieur **MBUKWE Lodrick SAMGWA**, Étudiant en Master II à l'**Université de YAOUNDÉ I**, Département de Géographie, à effectuer des enquêtes de terrain à OBALA, dans le cadre de ses travaux de recherche intitulés « **URBAN SPATIAL EXPANSION AND SOCIO-ECONOMIC DEVELOPPMENT OF OBALA SUBDIVISION** ».

En foi de quoi, la présente autorisation de recherche est délivrée à l'intéressée pour servir et valoir ce que de droit./-

AMPLIATIONS :

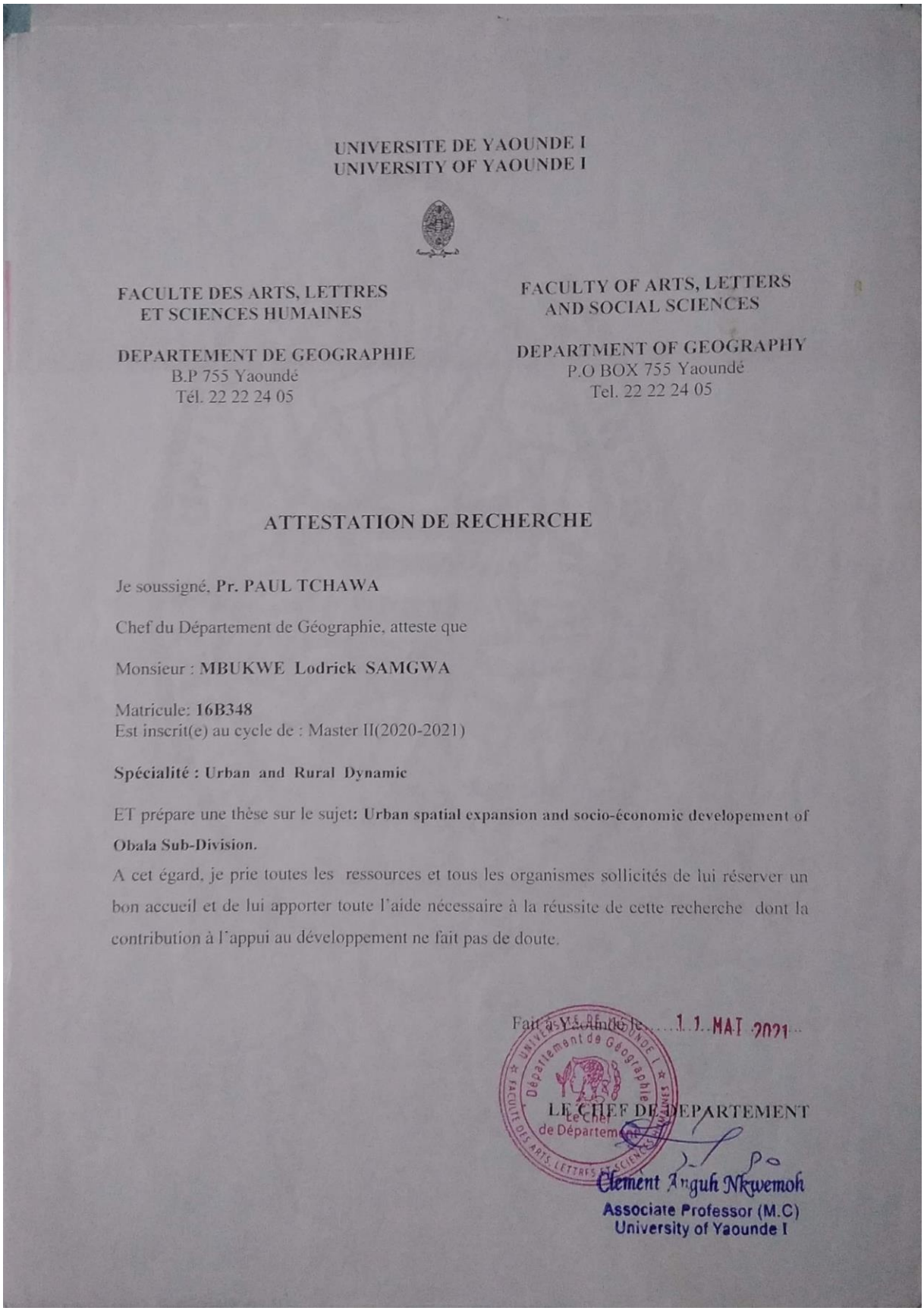
-PREFET/L/MTELE
-CB/ OBALA
-COM/SEC/PUB/OBALA
-COM/SPE/OBALA.
-INTERESSÉE
-DOSSIER /CHRONO /ARCHIVES

OBALA LE 01 JUIL 2021

LE SOUS-PRÉFET,

Administrateur Civil Principal

b- Research attestation



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ATTESTATION DE RECHERCHE

Je soussigné, **Pr. PAUL TCHAWA**

Chef du Département de Géographie, atteste que

Monsieur : **MBUKWE Lodrick SAMGWA**

Matricule: **16B348**
Est inscrit(e) au cycle de : Master II(2020-2021)

Spécialité : Urban and Rural Dynamic

ET prépare une thèse sur le sujet: **Urban spatial expansion and socio-économic developement of Obala Sub-Division.**

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

Fait à Yaoundé le 11 MAI 2021

LE CHEF DE DEPARTEMENT

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

c- Research questionnaire

Topic: urban spatial expansion and socio-economic development of the Obala sub-division

Questionnaire for the household

Questionnaire N° …….

Quarter …….

Date ……..…..

PART 1; personal information of the interviewed				
CODE	**QUESTION**	**ANSWERS**	**RESPONSE**	**CONTROL**
Q01	Sex	male (1) female (2)	1 2	
Q02	Age limit	20-29 (1) 30-39 (2) 40-49 (3) 50-59 (4) 60-69 (5) 69 plus (6)	1 2 3 4 5 6	
Q03	Matrimonial status	Single (1) Married (2) Divorce (3) Widow (4)	1 2 3 4	
Q04	Occupation	Civil servant (1) Business man (2) Non (3)	1 2 3	
Q05	Educational level	Primary (1) Secondary (2) University (3)	1 2 3	
Q06	Monthly revenue	Less-than 50000f (1) 50000-100000f (2)	1 2	

		100000-150000 (3) 150000-200000 (4) 200000-250000 (5) 250000 and above (6)	3 4 5 6	
Q07	Place of birth	Obala sub-division (1) Out of Obala sub-division (2)	1 2	
Q08	What is your region of origin	Extreme-north (1) North (2) Adamawa (3) North-west (4) South-west (5) West (6) Centre (7) Littoral (8) East (9) South (10)	1 2 3 4 5 6 7 8 9 10	(If Q7 = response is 2 ask Q8) (if Q7 = response is 1 skip Q8)
Q09	When did you settle in Obala?	Before 1980 (1) 1981 – 1990 (2) 1991- 2000 (3) 2001-2010 (4) 2011 2020 (5)	1 2 3 4 5	

PART 2; Obala sub-division expansion and elements.				
Q10	Has the sub-division witness any change since you came?	Yes (1) No (2)	1 2	
Q11	Why? (precise)	…… ……		(if Q10 = response is 2 ask Q11)

Q12	What can be the cause? (Tick from the following)	Council plans (1) Population growth (2) Land acquisition (3) Transport and communication network development (4) Migration (5) Job opportunities availability (6) Promotion of community networks (7)	1 2 3 4 5 6 7	
Q13	Do actors play a role in the sub-division expansion?	Yes (1) No (2)	1 2	(If Q13 response = 2 then skip to Q17)
Q14	Which type? (tick)	Internal actors only (1) External actors only (2) Both internal and external actors (3)	1 2 3	
Q15	Who are they actors?	Migrants (1) International NGOs (2) External donors (3) The state (4) Elites (5) Municipal council (6) The population (7) Local NGOs (8)	1 2 3 4 5 6 7 8	
Q16	How have they influence the change?	Infrastructural development (1) Creation of build-up areas (2) Take active part in the sub-division developmental affaires (3) Creation of developmental project (4)	1 2 3 4	

PART 3; socio-economic development of Obala sub-division.				
Q17	Have you noticed some other changes in the people and business?	Yes (1) No (2)	1 2	
Q18	What is the nature of the change?	Positive (1) Negative (2)	1 2	
Q19	Which sectors has been affected the most?	Education (1) Health (2) Investment (3) Employment and unemployment (4)	1 2 3 4	
Q20	Which of the following factors have a negative influence on the socio-economic development of the sub-division?	Low investment (1) Industrialisation (2) Labour force (3) Lack of infrastructure (4) Corruption (5)	1 2 3 4 5	
Q21	Which of the following factors have a positive influence on the socio-economic development of the sub-division?	Gross domestic product (1) Level of commercial activities (2) Level of industrialisation (3) Availability of labour force (4) High income level of the population (5)	1 2 3 4 5	

PART 4; sustainable development of the sub-division.				
Q22	Is Obala improving in development?	Yes (1) No (2)	1 2	

Q23	Which are the factors that account for it development?	Improvement in education (1) Improvement in health (2) Improvement in water supply and sanitation (3) Level of urban development (4)	1 2 3 4	

French version of the questionnaire

Sujet : urban spatial expansion and socio-economic development of the Obala sub-division

Questionnaire pour les ménage

Questionnaire N° …….

Quartier ……

Date …….....

Partie 1 : information personnel du questionné				
CODE	**QUESTION**	**REPONSE**	**CHOIX**	**COMMAND**
Q01	Sexe	Homme (1) Femme (2)	1 2	
Q02	Tranche d'âge	20 – 29(1) 30 – 39 (2) 40 – 49 (3) 50 – 59 (4) 60 – 69 (5) 69 et plus (6)	1 2 3 4 5 6	
Q03	Statu matrimonial	Célibataire (1) Marie (2) Divorce (3) Veuve(s) (4)	1 2 3 4	
Q04	Occupation	Fonctionnaire (1) Hommes d'affaire (2) Aucun (3)	1 2 3	
Q05	Niveaux d'étude	Primaire (1) Secondaire (2) Universitaire (3)	1 2 3	
Q06	Revenue par mois	Moins de 50000f (1) 50000 – 100000 (2) 100000 – 150000 (3) 150000 – 200000 (4)	1 2 3 4	

		200000 – 250000 (5) 250000 et plus (6)	5 6	
Q07	Lieux de naissance	Arrondissement d'Obala (1) Hors de l'arrondissement (2)	1 2	
Q08	Quel est votre région d'origine ?	Extrêmes-nord (1) Nord (2) Adamaoua (3) Nord-ouest (4) Sud-ouest (5) Ouest (6) Centre (7) Littorale (8) Est (9) Sud (10)	1 2 3 4 5 6 7 8 9 10	(Si la Q7 est égale a 2 alors poser la Q8 si autre sauter.)
Q09	Quand est-ce que vous vous est installé à Obala ?	Avant 1980 (1) 1981 – 1990 (2) 1991 – 2000 (3) 2001 – 2010 (4) 2011 – 2020 (5)	1 2 3 4 5	

Partir 2 : éléments et expansion de l'arrondissement d'Obala				
Q10	Est-ce qu'il Ya eu des changements dans l'arrondissement d'Obala ?	Oui (1) Non (2)	1 2	
Q11	Pourquoi ? préciser	…… …… …… ……..		(Si la Q10 est égale à 2 poser la Q11.)

Q12	Quelles peut être les couse ? (Choisir entre le proposition)	Plan de la commune (1) Croissance de la population (2) Appropriation de terrain (3) Développent de réseaux de communication et de transport (4) Migration (5) Opportunité d'emploi (6) Promotion des activité communautaire (7)	1 2 3 4 5 6 7	
Q13	Les acteurs joue-t-il un rôle dans expansion spatial de l'arrondissement ?	Oui (1) Non (2)	1 2	(si la Q13 est égale à 2 passe à la Q17)
Q14	Quelle type ? choisir	Acteur interne (1) Acteur externe (2) Tous acteur interne et externe (3)		
Q15	Qui sont les acteurs ?	Migrant (1) ONG international (2) Donneur externe (3) L'Etat (4) La marie municipale (5) La population (6) ONG local (7)	1 2 3 4 5 6 7	
Q16	Comment on t'il influencé le changement ?	Développent des infrastructures (1) Création des zones de construction (2) Participation active aux affaires de développement du lotissement (3) Création de projet de développement (4)	1 2 3 4	

Partie 3 : développement socio-économique de l'arrondissement de Obala

Q17	Avez-vous remarque des changement chez les personne et leurs business ?	Oui (1) Non (2)	1 2	
Q18	Quelle est la nature du changement ?	Positive (1) Négative (2)	1 2	
Q19	Quelle sont les secteurs les plus touche ?	Education (1) Sante (2) Investissement (3) Emploi et chômage (4)	1 2 3 4	
Q20	Quelle sont les facteurs qui affect négativement le développement socio-économique de l'arrondissement d'Obala ?	Faible investissement (1) L'industrialisation (2) Main-d'œuvre (3) Manque d'infrastructures (4) Corruption (5)	1 2 3 4 5	
Q21	Quelle sont les facteur qui affect positivement le développement socio-économique de l'arrondissement d'Obala ?	Produit intérieur brut (1) Niveau des activités commerciales (2) Niveau d'industrialisation (3) Disponibilité de la main-d'œuvre (4) Niveau de revenu élevé de la population (5)	1 2 3 4 5	

Partie 4 : développement durable de l'arrondissement				
Q22	L'arrondissement d'Obala s'améliore-t-il dans le développement	Oui (1) Non (2)	1 2	

Q23	Quelles sont les facteurs qui contribue à son développement ?	L'amélioration de l'éducation (1) L'amélioration de la sante (2) L'amélioration de l'approvisionnement en eau et de l'assainissement (3) Niveau de développement urbain (4)	1 2 3 4	