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**THE INFLUENCE OF THE CAMEROON-CONGO ROAD
INFRASTRUCTURE ON THE SOCIO-ECONOMIC
DEVELOPMENT OF SANGMELIMA TOWN**

A dissertation submitted in partial fulfillment of the requirements for the award of a Master's
Degree in Geography

Option: MARGINALITY, DEVELOPMENT STRATEGIES AND GLOBALIZATION

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DEDICATION

To my parents; Ousmanu Melo Forchu and Melo Mariatou Yogyu

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LIST OF ABBREVIATIONS AND ACCRONYMES

ADB	African Development Bank
AFD	Agence Française de Développement
BDEAC	Banque de Développement des États de l’Afrique Centrale
BUCREP	Bureau Central de Recensement et d’Etude de Population
CAL	Cambridge Advanced Learners
CAR	Central African Republic
CEFAM	Centre de Formation pour Administration Municipale
CEMAC	Central African Economic and Monetary Community
CRTV	Cameroon Radio Television
CSESS	Conseil Supérieur de L’Economie Sociale et Solidaire
ECCAS	Economic Commission of Central African States
ECOWAS	Economic Community of West African States
EU	European Union
FALSS	Faculty of Arts Letters and Social Sciences
GBPS	Government Bilingual Primary School Sangmelima
GBHS	Government Bilingual High School Sangmelima
GIZ	German Technical cooperation
HDR	Human Development Report
JICA	Japanese International Cooperative Agency
IGA	Income Generating Activities
IMF	International Monetary Fund
MNHW	Multi National Highway
MINT	Ministry of Transport
MINTP	Ministry of Public Works
NGOs	Non-governmental Organizations
NIC	National Institute of Cartography
UNDP	United Nations Development Program
PRSP	Poverty Reduction Strategy Paper
RF	Road Fund
RN	Route Nationale

SMEs	Small Medium Enterprises
SOTUC	Société des Transport Urbain du Cameroun
SDGs	Sustainable Development Goals
TAHW	Trans-African High Way
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific and Cultural Organization
UIECC	Université Inter-Etat Cameroon-Congo
USAID	United States Agency for International Development
WCED	World Commission on Environment and Development
WB	World Bank
WHO	World Health Organization

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ABSTRACT

It is often stated that where a road passes, development follows. This assertion holds true for the construction of the Yaounde-Brazzaville corridor, which has sparked socioeconomic progress, particularly in the town of Sangmelima and its surrounding. However, along with developmental benefits, the road's construction has also brought about challenges such as rapid urbanization, illicit trade, and issues faced by road users. Against these setbacks, this study aims to investigate the impact of the Sangmelima-Djoum highway construction on the socioeconomic development of Sangmelima town. The study examines the influence of the Sangmelima-Djoum road section and the socioeconomic development of Sangmelima town, guided by three hypotheses. The hypothetico-deductive method was employed for data collection, processing, and analyses. Primary data was gathered through field surveys involving 168 respondents from seven quarters of the Sangmelima subdivision, as well as interviews, focus group discussions, and observations. Questionnaire data was process using Microsoft excel, while Landsat satellite images from 2000 to 2024 were analyzed. Secondary data was obtained from published and unpublished documents from libraries and from websites. The methods used were conducted to test the hypothesis, draw conclusions, and make recommendations for policy implementations. Results revealed significant urbanisation in Sangmelima town since the highway's construction, evidence from Landsat images and respondents' scores. The study also found that the road construction has facilitated cross-bordered trade between Cameroon and Congo, thereby enhancing the socioeconomic livelihood of residents. However, challenges such as communication, administrative and economic issues were identified for road users along the Sangmelima-Djoum section. Based on the study's findings, it is evident that effective urban planning policies in Sangmelima are crucial for addressing rapid urbanization. Additionally, controlling illicit cross-border trade and ensuring proper road maintenance for user safety are essential measures. Implementing these actions is vital for fulfilling the road's purpose and fostering broader socioeconomic development in the region.

Keywords; *Sangmelima-Ouessou highway, socioeconomic, development, Sangmelima town*

RÉSUMÉ

On dit souvent que là où la route passe, le développement suit. Cette assertion est confirmée par la construction du corridor Yaoundé-Brazzaville, qui a engendré des progrès socio-économiques, surtout dans la ville de Sangmélina et ses alentours. Toutefois, outre les avantages en termes de développement, la construction de la route a également posé des défis tels que l'urbanisation rapide, le commerce illicite et les problèmes des usagers de la route. Face à ces défis, cette étude vise à examiner l'impact de la construction de l'autoroute Sangmélina-Djoum sur le développement socio-économique de la ville de Sangmélina. L'étude analyse l'influence de la route Sangmélina-Djoum sur le développement socio-économique de la ville de Sangmélina, en se basant sur trois hypothèses. La méthode hypothético-déductive a été utilisée pour collecter, traiter et analyser les données. Les données primaires ont été obtenues grâce à des enquêtes sur le terrain impliquant 168 répondants de sept quartiers de la ville de Sangmélina, ainsi que des entretiens, des discussions de groupe et des observations. Les données des questionnaires ont été traitées à l'aide de Microsoft Excel, tandis que les images satellites Landsat de 2000 à 2024 ont été analysées. Des données secondaires ont été recueillies à partir de documents publiés et non publiés dans des bibliothèques et sur des sites Web. Les méthodes utilisées ont été menées pour tester les hypothèses, tirer des conclusions et formuler des recommandations pour la mise en œuvre des politiques. Les résultats ont révélé une urbanisation significative dans la ville de Sangmélina depuis la construction de l'autoroute, confirmée par les imageries Landsat et les réponses des enquêtes. L'étude a également montré que la construction de la route a facilité le commerce transfrontalier entre le Cameroun et le Congo, améliorant ainsi les moyens de subsistance socio-économiques des habitants. Cependant, des défis tels que la communication, l'administration et les problèmes économiques ont été identifiés pour les usagers de la route le long de la section Sangmélina-Djoum. Sur la base des résultats de l'étude, des recommandations ont été formulées, notamment la mise en œuvre de politiques d'urbanisme efficaces à Sangmélina pour faire face à l'urbanisation rapide, le contrôle du commerce transfrontalier illicite et l'assurance d'un entretien routier adéquat pour la sécurité des usagers. Ces mesures sont essentielles pour atteindre les objectifs de la route et stimuler un développement socio-économique plus large dans la région.

Mots-clés : autoroute Sangmelima-Ouessou, socioéconomique, développement, ville de Sangmélina

GENERAL INTRODUCTION

0.1. Background of the Study

Roads play a very important role in our daily lives. They facilitate movement and help to reach our economic prosperity and social objectives. Roads are blessings to us in so many ways. For instance, it improves safety and better access to jobs, preservation of personal freedom and independence. The modern developed society foundation is thanks to the mobility enabled by roads. The benefits of roads are enjoyed by all citizens regardless of whether they use the road or not. The use of roads has evolved with time. The first methods of transportation were by horses and oxen or even human beings carrying goods over dirt tracks. The Persians later-on built a network of roads across the Persian Empire. The construction of the Cameroon -Congo road was part of the integration plan of the Economic Commission of the Central African States (ECCAS) which aimed at connecting the capitals of the eleven member countries. The total length of the project was 504.5km. We should note that the work was co-funded by Congo, Cameroon, African Development Bank (ADB), European Union (EU), Japanese International Cooperative Agency (JICA). According to the African Development Bank, the road project is a major one since it is one of the main axes to connect the Central African Republic (CAR) to Cameroon, the Southern region of Gabon and the Brazzaville Pointe noire road to Congo and Congo to Cameroon. So therefore, it aimed to ease communication between these states. The trans-African highway road network comprises transcontinental road projects in Africa being developed by the United Nations Economic Commission of Africa (UNECA), The African Development Bank (ADB) and the African Union in conjunction with the regional and international communities. They aim to promote trade and to alleviate poverty in Africa through highway infrastructural development and the management of road-based trade corridors.

The history of transport has seen a significant evolution over the century both at the level of mobility and on the available modes that in turn had an impact on the distance that people and goods could travel. People travel to access opportunities, and the share of each activity has evolved in time, with significant differences across societies worldwide, as well as between urban areas. The history of transport is largely one of technological innovation. Advancement in technology has allowed people to travel farther, explore more territories and expand their influence over large areas. As new inventions and discoveries are applied to transport problems, travel times decreased while the ability to move more and

larger loads decreased. Innovation continuous as transport researchers is working to find new ways to reduce cost and increase transport efficiency. International trade was the driving motivator behind advancements in global transportation in the pre modern world. Transport on road can be roughly grouped in to the transportation of goods and transportation of people. In many countries, licenses requirements and safety regulations ensure a separation of two industries. Movement along roads may be by bikes or automobile, trucks or by animals such as horses. Cargo may be transported by trucking companies, while passengers could be transported via mass transit. Commonly defined features of modern roads include defined lanes and Signage. Various classes of roads exist from two-lane local roads with at-grade intersections to controlled access high ways with all cross -traffic grade -separated. According to the ministry of transport (MINT)/public works (2015), there are about 50,000km of roads in Cameroon of which 5,000km are paved. The road network both paved and unpaved is poorly maintained. The country's road density is estimated at 7km for each 1000km². During the wet season, only the paved roads remain passable. Traffic on the unpaved road may be restricted by rain barriers. The road fund (RF) of Cameroon was created in 1996 in order to implement the Government policy on the road sector. Government efforts to improve the state of condition of Cameroon road are faced on a network of 2,700km and the process is being undertaken. The construction of the Cameroon -Congo road highway was not only aimed at linking both countries but also as a linking way to all the other eleven member countries of Central Africa such as Gabon, Congo, Equatorial Guinea, CAR among others.

0.2. Justification of The study

Since the independence of Cameroon in 1960, the country (Cameroon) has always had a ministerial department that was in charge of road construction. But because of the economic crises of the 1980's and 1990's, there have been a general slowdown in development. It is commonly said that ``where a road passes, development follows''. Though this sounds very appropriate for the development of human beings, it is unfortunately detrimental to natural resources especially in areas rich in biodiversity. This is the case with the Cameroon -Congo road stretch, constructed with the objective of contributing to increase trade and to the strengthening of cooperation between CEMAC zones in general and between Cameroon and Congo in particular.

This study intends to present the relevance of this road network to the socioeconomic development of the Sangmelima town and also point out problems associated

to the development of the road corridor. The Road Fund (RF) was created in 1996 to ensure the development of roads in the country. Since the independence of Cameroon, the road linking Cameroon to Congo, Cameroon to Gabon, has greatly been negated by the Cameroon authorities despite the fact that it is a gateway to Congo and Gabon. The greatest transaction between Cameroon and Congo is through this corridor. Before the road project came up, goods used to get rot on the way in the course of transportation. People could travel for many days before reaching their destination. The Cameroon -Congo road project was made in two phases:

Phase 1; It was constructed by Congo from Ketta to Biessi section, that is, 121 kilometers. Cameroon took from Congo boarder to Mintom earth road section of 105.5 kilometers.

Phase 2; On the side of Congo was to construct from Biessi to Cameroon border earth road section of 195 kilometers, and on the side of Cameroon, from Mintom to Djoum section of 83 kilometers.

0.3. Delimitation of the study

This work has been delimited into three. That is, temporal, thematic and special delimitation

0.3.1. Temporal delimitation

The time for this work can be traced back to the year 2000, to present day. The reason for the choice of this time frame is that, before the construction of the road, many activities were carried out between Cameroon and Congo through this road, according to respondents in the Sangmelima town. Before the year 1960, Cameroon did not have any poverty eradication plan and by then, roads were still very bad and not tarred. The poverty reduction strategy papers (PRSP) are prepared by a country in serious consultation with the World Bank and the International Monetary Fund (IMF). Since many years ago, Sangmelima has been witnessing tarred roads, with the main road linking Sangmelima to Yaounde and also the road linking Sangmelima to Djoum, which was recently constructed thanks to the Cameroon -Congo road project of 2012. With this, the town of Sangmelima has witnessed a lot of positive and negative changes. By 2015, the Ketta-Djoum ROAD ought to have been completed. Congo finished her own part up to Biessi which is the Congo -Cameroon border, and Cameroon just finished hers recently. At first, the road linking Sangmelima to Djoum

was inaccessible, which made the transportation of people and goods very difficult and it took much time to travel throughout the road. Since the launching of this road project (Cameroon – Congo road project) there have been much development in Sangmelima town of which much is still to be done.

0.3.2. Thematic delimitation

The study is based on the Cameroon -Congo road project and it's important on the socioeconomic development of Sangmelima town, which aimed at showing the contribution of road development. The development of Sangmelima plays a pertinent role in achieving sustainable development especially on the socioeconomic aspect, has gone a long way to pave way to many other activities. The work also discusses the issues and the challenges of transportation on the Sangmelima-Ouessou road section. Also, we are going to see how the road construction has contributed to transnational trade between Cameroon and Congo. There have been great development opportunities, especially on the economic plan like the building of schools, beautiful houses, hospitals, play grounds, and touristic sites. Again, villages along the road have benefited from schools, hospitals, clinics, among others. It is thanks to the construction of this road that the Inter-Etat (Inter-state) school was constructed in Sangmelima. This school is an Inter-state for Cameroon and Congo. It explains the presence of many Congolese in Sangmelima, especially in “Monavebe” quarter where the school is situated. Some challenges faced by road users like drivers are also key elements to be examined in this study and other related strategies to be adapted.

0.3.3. Spatial delimitation

Sangmelima is located between latitude 2° 55' 59" North and longitude 11° 58' 59" East. It is found in the Dja and Lobo division, in the south region of Cameroon. Sangmelima has a strategic location as it is found at the center of the region. Many towns like Djoum, Mvomeka'a, among others. One cannot travel from Yaounde (capital of Cameroon) to Djoum, Mvomeka'a and many other towns and villages around the subdivision without passing through Sangmelima. This work is concentrated on the impacts of the road in Sangmelima town, and its impacts extend right up to Congo, passing through Djoum and Mintom in Cameroon.

The town of Sangmelima is situated in the vast south Cameroun plateau with an altitude varying between 600m and 700m above sea level (Council Development Plan, 2015). Generally, Sangmelima has a relatively accidental relief which is undulating,

consisting of pen plains and valleys which intermingle with hills. In some areas, convex hills with narrow valleys are common (Council Development Plan, 2015).

Sangmelima is a town in Cameroon and also the chief town of the Dja and Lobo division in the south region of Cameroon. Sangmelima is found some 200km South-East of Yaounde and 105km from Ebolowa. Sangmelima is located approximately 140km northwest of Djoum. It is the head quarter of the Dja and Lobo division of the South Region of Cameroon. The language spoken there is the “bulu language “and also French language, since it is one of the two official languages in Cameroon. It has a total population of 132,513 people (2019) with a total land surface of about 2,155km. Sangmelima is surrounded by Cities like Oyem that is close to Gabon, Nsang towards the Equatorial Guinea, Mbalmayo, Ebolowa, Ambam too are located towards the Equatorial Guinea and also Akonolinga. The village of our president, His Excellency President Paul Biya is Mvomeka’a, which is near Sangmelima in the meyomessala subdivision in the Dja and Lobo division. Mvomeka’a has an airport which covers a very large land surface.

The figure below shows the location of the study area.

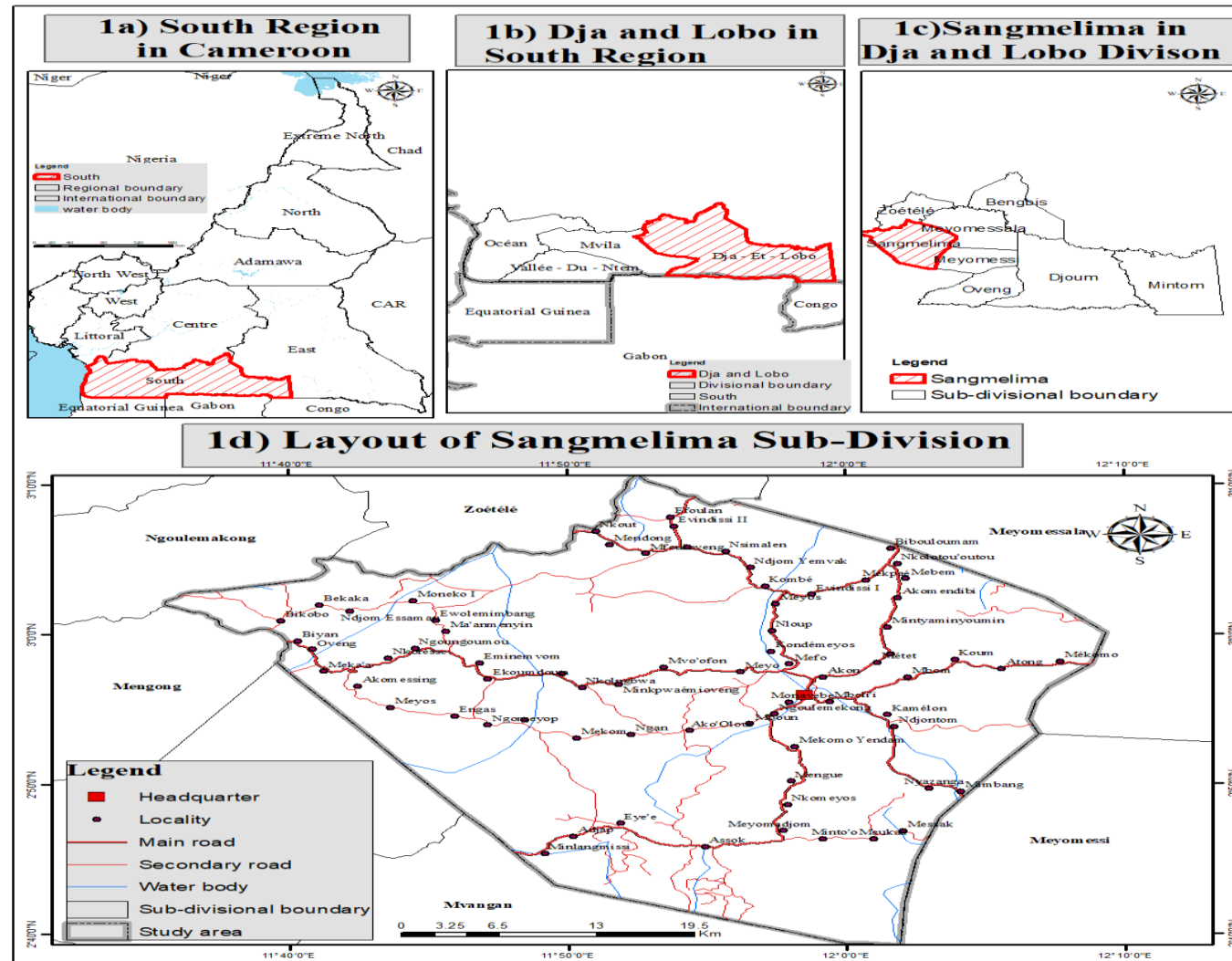


Figure 1: Location of the study area

Source; Adopted from NIC, 2023

0.4. Literature Review

The highest illiteracy would be to handle a research work nowadays without viewing other research works and what other authors have written about a particular topic. Of which the literature review is regarded as the scientific work in the scientific research writing.

Literature review consists of research works done and written by other authors and stored in the domain of research. It is mostly texts, news, conference papers, published and unpublished documents, reports and different dissertation on a given research topic. But what have been used in carrying out this research work are the published documents in the web and other reviews from the school (University of Yaoundé 1) library. These documents have different points of view concerning the topic which is focused on the influence of the Cameroon -Congo road project on the socio -economic development of Sangmelima town. The literature review of this work handles directly the main issues raised on the statement of the research problem. The broad influence of roads in the society would suggest that they should be treated as public rather than private goods.

0.4.1. The linkages between road construction and urbanization

Road transport, especially the transnational highway is the driver of the socio -economic development to any society. For over three decades, urbanization and urban development alongside urban planning have become an essential issue to urban dwellers, government institutions and professionals in the developed and developing countries. It is in this way that this research paper examines urbanization challenges and prospects in Sangmelima. The growing population of Sangmelima like in other emerging towns in Cameroon suffer from the socio -economic and environmental issues. Thus, this study investigates three assumptions. Firstly, the existing urban area encourages further urbanization and large conurbations exert a stronger attraction than smaller ones, due to its economic activities. Secondly, the availability of rail and road infrastructures and their access to centres of activities encouraged by urbanization. The influence of road network however is expected to be stronger than rail network, since the road network is larger and it is the most commonly used means of transport. Thirdly, urbanization is also influenced by spatial policies and not only the fact that it is an autonomous process influenced by transport accessibility and attraction of existing urban areas.

The relationship between road infrastructure and urbanization has been extensively studied in the field of urban planning and development. According to William (2003), the provision of road infrastructure plays a critical role in shaping urban growth and development. Roads facilitate the movement of people and goods, leading to the expansion of cities and the development of new urban areas. This has been particularly evident in developing countries and more precisely the case of Sangmelima town, where new road projects often result in rapid urbanization and economic development.

According to Gina Porter (2012) assessing the impact on the rural poor of constructing roads in Ghana and Nigeria, this author focused on women since women experience more poverty than men, a situation that prevails in the Dja and Lobo division. They are the mainly farmers producing foodstuffs that are sold in the markets. The farming is mostly carried out by strangers from different regions such as Bamenda people from the North West region and the Bamileke people from the western region of Cameroon. Sangmelima is the chief town in the Dja and Lobo division in the south region of Cameroon. The present study evaluates the importance of the construction of the Ketta-Djoum highway to the socio-economic development Sangmelima town and its population. This study further goes ahead to evaluate how this trans-national road has impacted trade and development in this area and related infrastructure.

Transport infrastructure is believed to stimulate and guide urban growth through the improvement of accessibility (Anas et al., 1998). This assumption is demonstrated in a long tradition of policies aiming at channeling urban growth by investing in transport infrastructure. It is also known that urbanisation is more likely to happen near existing urban areas, examples being the similar development of cities or the appearance of suburbs nearby major cities. Furthermore, where urbanisation occurs or not, is related to spatial planning and policies which design areas for, or preserve locations from development. This study goes further to evaluate examine the role of trans-national high ways on urban growth in the Sangmelima town and also goes ahead to assess the socio-economic constraints faced in the Cameroon -Congo highway.

Change in land use patterns such as urbanisation is a slow process with a low reversibility (Wegener and Furst, 1999). Thus, it can only be studied over the long term. However, only few empirical studies investigate this process over multiple decades. Most studies investigating the long-term impact of transport infrastructures model population

change as a proximity for growth and urbanisation (for instance; Baum-Snow, 2007; Duranton and Turner, 2012; Koopmans et al., 2012; Levinson, 2008). Rail networks have influenced the distribution of population and encouraged a rise in urban population especially after their emergence, although with variations across regions and time periods (Atack et al., 2010; Mojica and Marti-Henneberg, 2011). Similarly, road networks, specifically motorways, have attracted population to their vicinity (Baum-Snow, 2007; Duranton and Turner, 2012; Garcia-Lopez, 2012). This study however does not examine the whole of transport systems but only the road transport particularly the high way or trans-national road or the multinational road.

0.4.2. The road construction and International trade

Urban studies have designated that transport infrastructure is crucial for the development of cities, regions and even countries. The construction of the linking road from one country to another, linking two administrative capitals is a strong initiative for international trade. International trade which is the exchange of goods between two or more countries can only be realized if there is a good road infrastructure linking the countries involved.

Many studies state that regional growth rate depends on observable and unobservable characteristics of regions. They include basic factors of production such as labour and capital, geographical conditions (relief and climate). The transport infrastructure has shown that the effects on growth at the regional and national level differ in different studies (Conley and Ligon, 2002). This study also examines how the road construction has influenced the growth of activities which have greatly participated in the socio-economic development of Sangmelima town and its environs, resulting from development of road transport infrastructure.

The development of road corridors has been shown to significantly enhance cross-border trade. Studies by Banomyong (2010) and Brooks (2014) emphasize that improved road infrastructure reduces transportation costs, shortens delivery times, and increases the reliability of supply chains. These factors are crucial for boosting trade volumes and facilitating economic interactions between neighbouring countries.

In the context of the Yaounde-Brazzaville corridor, the construction of the Sangmelima-Djoum road section has had a positive impact on cross-border trade between Cameroon and Congo. Improved road conditions have led to increased trade flows, as

businesses can transport goods more efficiently. This has also opened up new market opportunities for local entrepreneurs, contributing to economic growth and poverty reduction in border regions.

The economic decisions are built and limited by the transport costs of goods and commodities from one place to another (Christaller, 1966; Lösch, 1954; Isard, 1960; Fujita et al., 1999; Glaeser & Kohlase, 2003). Many empirical works have pointed to a strong relationship between access to sea, percent of population living in coastal areas, urbanization and economic growth (Gallup, & Mellinger, 1998). The development of areas far from the sea depends on the investments in Infrastructure, despite the existence of natural resources. These investments are related to specific production and trade patterns imposed by high transport costs. As documented recently, major roads affect the distribution of the population (Baum-Snow 2007a, 2007b; Duranton & Turner 2007) and labour markets (Michaels 2008). Based on these evidences we propose to investigate the impacts of transport cost reduction on income or wages premium, human capital formation and labour markets. This study goes on to evaluate how the trans-national road has influenced international trade and other activities emerging thanks to the construction of the high way.

Chein et Al, (2009) in studying the effects of transport infrastructural development in Brazil investigated the relationship between urbanization and income per head by exploring the role of transportation costs in the process of Urbanization in Brazil. This work therefore shows the relationship between urbanization and income. But we are going further to identify the relationship between urbanization, economic growth and development. In this work, we want to identify the relationships that exist between urbanization and some indicators of development through a reduction in transport cost. (Baum-snow, 2007) and (michals, 2008) both used road infrastructural improvement to show how to promote sub-urbanization and increased international trade respectively. This work therefore pays more attention to cross border trade promoted by the road infrastructure which has contributed to the growth and development of Sangmelima town.

0.4.3. Road construction and its impacts

The level of concern and urgency regarding environmental degradation has reached unprecedented levels locally, nationally, and internationally. The extent of environmental degradation varies across countries and regions of the world. According to Holtz-Eakin and Seldon (1995), this variation is significant.

Kalipeni (1992) states that poverty is the major cause of the depletion of natural resources and environmental degradation in Africa. In the Asia Pacific region, rapid population growth and continuous economic development are the primary drivers of environmental pollution (Dewaram, 2007). This assertion goes the same way with the roads of Cameroon and that of the Yaounde-Brazzaville corridor in particular.

In the United States, where population density is much lower than in India, the main cause of environmental degradation is the extremely high per capita consumption of resources and the consequent high carbon emissions (United Nations, 1997). Smyth (2008) conducted a study on the relationship between economic growth and environmental issues in China and concluded that a high rate of economic growth leads to high rates of pollution. This is because population growth and the resulting economic activities exert pressure on the natural environment. This same situation has been seen in Sangmelima town where population is concentrated along the road at Akon.

Despite the benefits of improved road infrastructure, road users often face significant challenges. According to Button (2010), issues such as poor road maintenance, traffic congestion, and safety concerns are common in many developing countries. Poor maintenance can lead to road deterioration, resulting in higher vehicle operating costs and increased travel times. Traffic congestion, on the other hand, can reduce the efficiency of transportation networks and contribute to environmental pollution.

Safety concerns are another critical issue, as highlighted by the World Health Organization (WHO, 2015). Road traffic accidents are a major cause of injury and death worldwide, particularly in low- and middle-income countries. Improving road safety requires a comprehensive approach, including better road design, enforcement of traffic laws, and public awareness campaigns.

This pressure is evident through the rapid decline in tropical forests, global warming, and environmental pollution (United Nations, 1992). Sangmelima has been a victim of pollution and forest exploitation since the launching of the road project.

Klarin (2018) noted that the aspirations of developed countries to improve the socio-economic and ecological situations in developing countries gathered scientists, economists, and humanists from ten countries in Rome in 1968. They discussed current problems and future challenges, including limited natural resources, population growth, economic development, and ecological problems.

The World Environmental Conference in Stockholm in 1972 drew global attention to the inextricable links between development and the environment (Okonkwo, 2013). Since then, the twin issues of economic development and environmental protection have engaged scientists and non-scientists alike worldwide (Okonkwo, 2000).

In 1983, the United Nations established the World Commission on Environment and Development (WCED) to develop a global change program aimed at raising awareness and concern about the negative impact of socio-economic development on the environment (Drexhage and Murphy, 2010).

In 1987, a commission of 19 delegates from 18 countries published a report titled “Our Common Future,” better known as the “Brundtland Report,” which introduced the concept of sustainable development (Drexhage and Murphy, 2010). This report analyzed and provided a clear overview of global conditions related to socio-economic development, environmental degradation, and population growth. It elaborated on the concept of sustainable development as a new approach aimed at responding to future challenges by achieving a balance between socio-economic development and the environment, reducing environmental degradation, and minimizing the exploitation of natural resources (WCED, 1987, cited in Klarin, 2018).

Terms such as “development and environment,” “development without destruction,” and “development in accordance with the environment” became increasingly common in publications (Klarin, 2018).

Based on the issues raised so far, debates on the implications of socio-economic development on environmental management have gained significant traction in contemporary research. This is the reason why we carried out this research.

0.5. Statement of the research problem

The link between transport infrastructure and socioeconomic development has attracted a lot of efforts and attention, especially in the developing countries. Road transport is the most widely used mode of transport that contributes to the socioeconomic development of many countries, especially in Africa. Public transport in urban areas has gained great attention in the recent years for improving sustainability and quality of urban life. The economic and environmental performance of towns (urban centres) can be enhanced by connecting resources to their destination effectively and facilitate massive mobility. For the

past two decades, a huge population growth has been recorded in the developing countries. Increased population has led to an increase in the demand for mobility through transportation. If the transport infrastructure cannot meet their demands, this will lead to problems like congestion at the streets and in the public transport too. Like for instance, the case of Akon main road in Sangmelima during school period where there used to be traffic and congestion, especially in the morning and in the afternoon at closing time. It becomes very difficult for students to get motorbike or taxis for school, which causes some students to always go late, in particular those that live far from school and those that live at the periphery like in “Mpwang”.

In order to promote sustainable transport system, environmental condition of a place, public health condition and economic conditions of residents can be raised by shifting from private to public transport. Apart from the development of the area through the transnational road, it has also resulted to urbanization of Sangmelima town with its numerous challenges such as illegal trade flows of Legal and illegal goods and illegal migration of people to and from neighboring Congo and Gabon.

Production has been diversified thanks to the multinational Cameroon -Congo road, where the socio-economic activities in the area has boosted. Unfortunately, the road has led to the illegal mobility of migrants; there have been an increase in crime wave in the town, vegetation loss and land clearing, the impacts on soil and water resources and other related social and economic disturbances which need to be checked out.

The international trade which existed between Cameroon and Congo ever since before the launching of the road project has highly been encouraged by the development of the road linking the two countries. Cameroonians now have the ease to go and sell their products in Congo and Congolese too have the freedom to legally bring their goods in Cameroon. This has impacted a long way trade and development in the area. With all the above justification, it is then important for us to focus on the developmental progress and setbacks in the town of Sangmelima.

From this statement of the research problem, the following research questions can be generated.

0.6. RESEARCH QUESTIONS

0.6.1. General research question

What are the socio -economic implications of the Cameroon -Congo multinational road on Sangmelima town?

0.6.2. Specific research questions

1: What are the links between the Cameroon -Congo road construction and Sangmelima Town?

2: To what extent has the Cameroon –Congo road infrastructure contributed to the socio-economic development of Sangmelima town?

3: What are the socioeconomic challenges faced by the Cameroon -Congo multinational road users?

From these research questions, the following hypotheses have been developed.

0.7. RESEARCH OBJECTIVES.

0.7.1. Main research objective

To evaluate the socio -economic implications of the Cameroon -Congo road infrastructure in Sangmelima.

0.7.2. Specific research objectives

1: To examine the relationship between the multinational highway and Sangmelima town.

2: To analyze the impact of the Cameroon-Congo road infrastructure on the socioeconomic development of Sangmelima town.

3: To assess the socio economic challenges faced by the Cameroon -Congo road users in Sangmelima town.

0.8. RESEARCH HYPOTHESES

0.8.1. General research hypothesis

The construction of the Cameroon -Congo (Brazzaville -Yaounde) road has positively contributed to the socioeconomic development of Sangmelima town.

0.8.2. Specific research hypotheses

1: The Cameroon -Congo road infrastructure has strengthened transit in the town of Sangmelima.

2: The Cameroon -Congo road infrastructure has greatly contributed socio-economic development in Sangmelima town.

3: The Cameroon -Congo highway road users in Sangmelima town face economic, social, administrative and environmental challenges.

0.9. VARIABLES AND OPERATIONALIZATION

- Independent variable; Road construction project
- Dependent variable; socio -economic development.

To operationalize these variables, it is important to note that socioeconomic development in the area of study depends on the road construction project as it affects the region directly and indirectly.

0.10. CONCEPTUAL AND THEORETICAL FRAMEWORK OF THE STUDY.

0.10.1. CONCEPTUAL FRAMEWORK

0.10.1.1. Concept of mobility

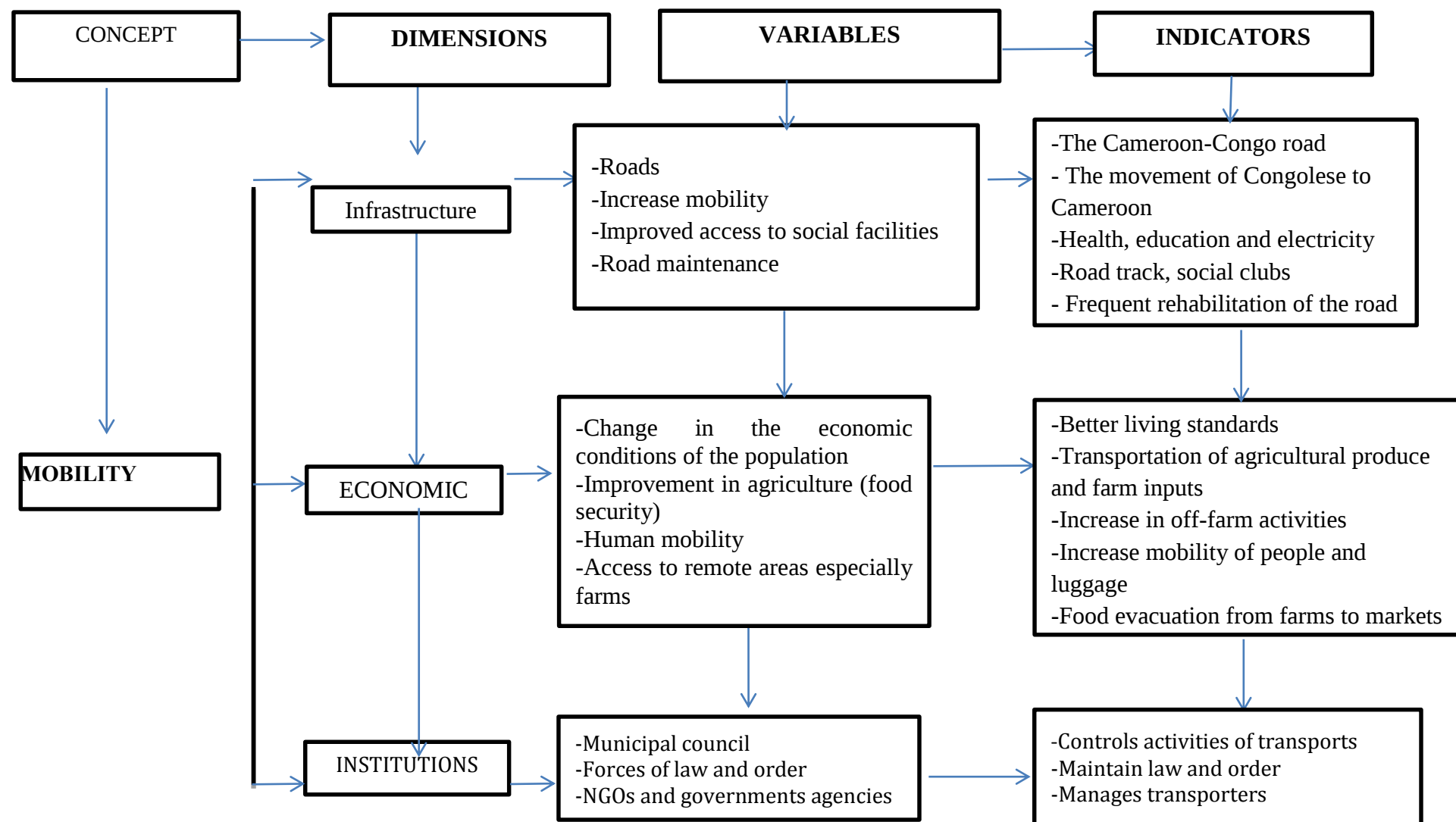
Transport or transportation is the movement of humans, animals and goods from one location to another. In other words, the action of transport is defined as a particular movement of an organism or thing from a point “A” (a place) to a point “B”. Modes of transport include air, land (rail and road), water, cable, pipeline and space. The field can be divided into infrastructure, vehicles and operations. Transport enables trade between people, which is essential for their socio-economic development. Passenger transport may be public, where operators provide scheduled services, or private. Freight transport has become focused on containerization, although bulk transport is used for large volumes of durable items. Transport plays an important part in economic growth and globalization, but most types

cause air pollution and use large amounts of land. While it is heavily subsidized by governments, good planning of transport is essential to make traffic flow and restrain urban sprawl. Transport infrastructure entails roads, canals, railways among others. Apart from these infrastructures, they are also facilities that act as support mechanisms to the transport sector which can either be ships in their categories, animals such as donkeys and houses, trains (wagons) and vehicles of different sorts (Dena, 2017). This study however, concentrates on road transport and its related infrastructure which has ignited socio-economic development in the study area.

The United Nation's first formally recognized the role of transport in sustainable development in the 1992 United Nation's Earth summit. In the 2012 United Nation's World Conference, global leaders unanimously agreed that transport and mobility are central to achieving the sustainable development targets (Banchuk, 2011). In recent years, data has been collected to show that the transport sector contributes to a quarter of the global greenhouse gas emissions and thus, sustainable transport has been mainstreamed across several of the 2030 Sustainable Development Goals (SDGs), especially those related to food, security, health, energy, economic growth, infrastructure, and cities and human settlements. Meeting sustainable transport targets is said to be particularly important to achieving the Paris Agreement.

It is possible to provide door to door service only by road transport. Automobiles provide high flexibility with low capacity, but require high energy and area use, and are the main source of harmful noise and air pollution in cities.

Table 1: Conceptualisation of mobility



Source: Conceived by the author, inspired from masters 2 classes and field work 2023

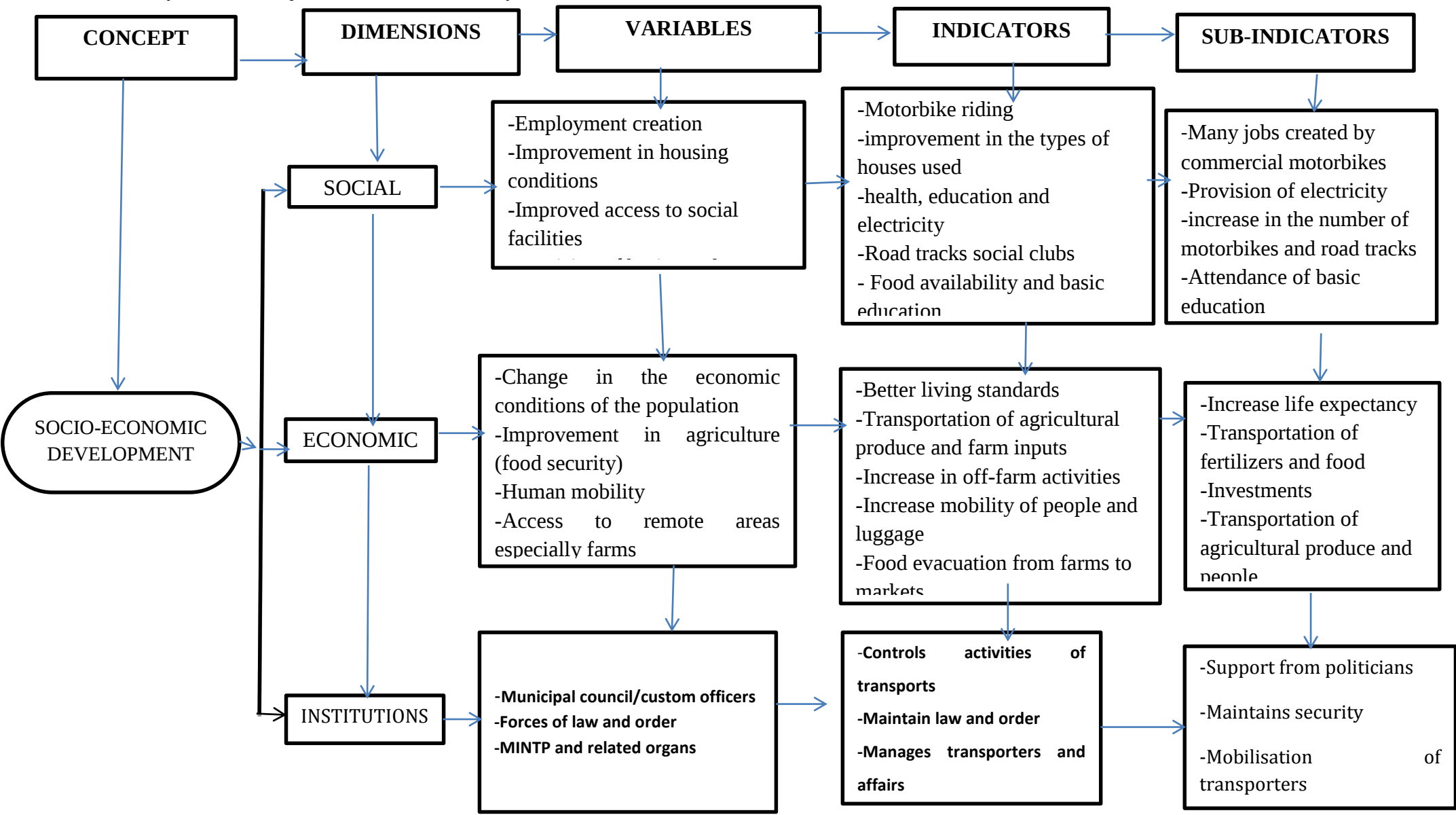
0.10.1.2. The concept of socio-economic development

The term socioeconomic development is complex just like the term development. To better apprehend the understanding of this term, the term “Development” is first reviewed while integrating social and economic aspects. Development is a complex term and does not have unequivocal criteria in defining it. As a concept, there are still severe difficulties in attempting to understand what development actually mean. Contemporarily, the definition of development varies depending on the problem and the purpose for which it is intended to be used. The Cambridge Advanced Learners (CAL) sees development as growth, change and more advancement. From the above perspectives, development can be in the political, cultural, economic, and social and many other dimensions in another light, development can be understood as an improvement, growth or a positive change in the society. It involves social, technological and economic transformation focusing on economic property. If a community or people have the capacity to satisfy the basic needs of a larger portion of its people or population, we talk of a developed society.

The term development can equally be defined from two view points; from the view point of the local community and their needs and from the view point of changes taking place within the Local (Alicia, 2002). In the context of our study, we will take the two aspects into consideration.

The study looks at development as improvements implanted in Sangmelima by transport in Creating jobs, enhancing agriculture, easing mobility and reducing poverty and a general Livelihood improvement. According to the Basic Needs approach, economic development is defined in terms of progress towards reducing the incidences of poverty, unemployment and Income inequalities.

Table 2: Conceptualisation of socio-economic development



Source: Conceived by the author, inspired from masters 2 classes and field work 2023

0.10.1.3. Accessibility

In the context being discussed, accessibility pertains to the creation of products, devices, services, or environments that can be easily used by individuals with disabilities. The idea behind accessible design and the implementation of accessible development is to facilitate both direct and indirect access, which involves compatibility with assistive technologies used by individuals. Accessibility can be seen as the capacity to reach and derive advantages from a system or entity. This concept emphasizes the importance of enabling access for individuals with disabilities or specific needs, as well as facilitating access through assistive technologies. Nevertheless, the advancement in research and development related to accessibility offer advantages that extend to all individuals.

It is important to differentiate between accessibility and usage. Usage refers to how effectively, efficiently, conveniently and satisfactorily a product, such as a device, service, or environment, can be utilized by specific users to archive specific goals in a given context. Accessibility, on the other hand is closely connected to universal design which involves creating products that can be used by individuals with diverse abilities across various situations. The aim of universal design is to ensure that products are accessible to all individuals, regardless of their disability status, promoting inclusivity for everyone.

0.10.2.Theoretical Framework of the Study

. This study is integrated in the problematic in relation to the transport infrastructure and socioeconomic development. This study is inscribed in the framework of the theory of spatial Diffusion of innovations and some development theories such as the theory of necessity for Development and that of collective action. This was in a bit to give the work a scientific base and to use the theories as a point of reference.

0.10.2.1. The theory of spatial diffusion of innovations

The general theoretical position of the theory of spatial diffusion of innovations consist of proposing a partial explanation as well as prediction possibilities about the state and probable evolution of geographic entities on basis of knowledge of their situation with respect to other geographic objects. It postulates Ideas and technologies spreading across cultures. The theory thus bases on aspects of typical spatial diffusion which suggests six elements: an environmental space; a diffusion time, in two or more intervals; an innovation or “message” to be diffused; a Set of message holders and message receivers in the initial time interval; an interaction path between message holders and message receivers. These six elements are indirectly suggestive of other elements that should be considered in examining

spatial diffusion in any culture and Economy which in turn depend in the culture and type of innovation. Innovations are developed in the course of interactive process depending on the actions of actors located in the centre. This action may be creation, anticipation and attempt to take a profit from it or Imitation of an innovation that has registered success elsewhere, both attitudes representing adaptation strategies.

0.10.2.2. Development Theories

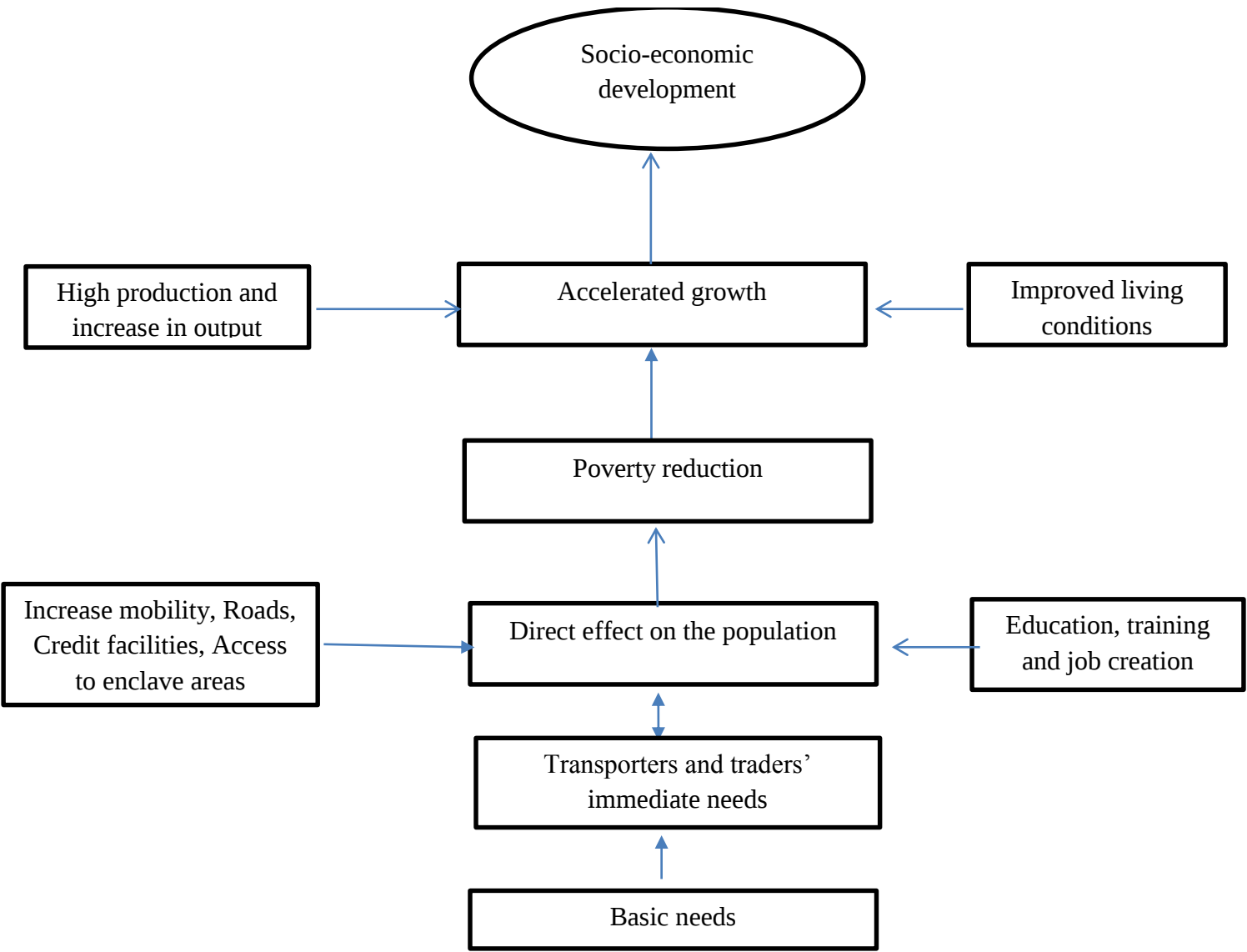
As put forth by Robert Chambers in his urban bias theory, development stakeholders often neglect rural areas in development. It is in this light that the Pan African Institute for Development was established to train aspiring development experts who will tactfully respond to the needs of rural areas.

Development theorists such as W.W. Rostow, saw development as a continuous process. To him, developments must begin from somewhere before it reaches a certain level which he called mass consumption and production. Villages develop to towns and gradually to cities and megalopolis. We will thus see development in town as a process of transformation effectuated by the high way infrastructure. According to the social theories on development, emphasis is being laid on job creation through human capital. In this theory, it is seen that employment creation, transport and accessibility, education and access to food as major tools for economic growth and development.

0.10.2.3. The theory of necessity for development

This theory is suggested by economists and integrated for use in improving on the welfare of Societies. The theory lays emphasis on long term growth for a country to possess the capacity to continuously supply diverse products to the population. This increase capacity is based on advanced technology and institutional ideologies necessary for adjustments. This theory shows that for a community to develop, basic needs of the people must be attained. In the context of this study, for transport infrastructure to effectively contribute to socioeconomic development, the basic needs of the activity must be met. The following figure illustrates the theory of necessity for development.

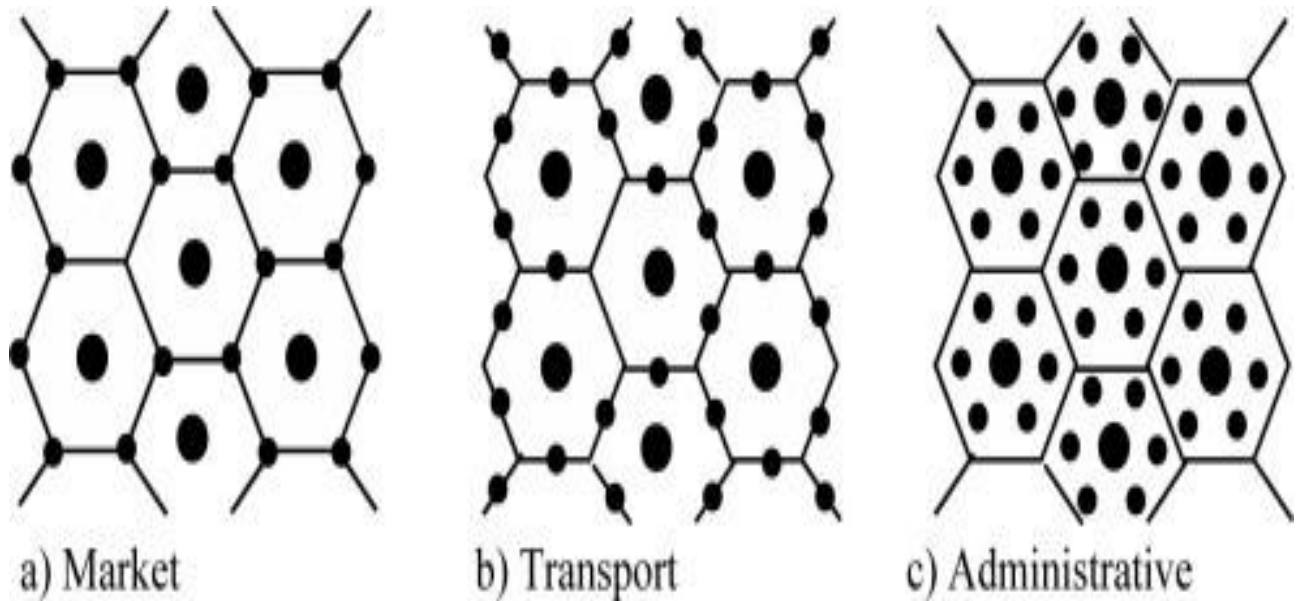
Table 3: Basic theory of necessity for development



Source; developed by the author, inspired by master2 classes

0.10.2.4. Walter Christaller’s central place theory 1933

This book was primarily concerned with the provision of goods and services to neighbouring towns and suburbs. He also identified markets, administrative and transport means. The transport means facilitated movement of commodities to markets and the suburbs, which will further lead to development of the cities concerned. This work is similar to the situation of Sangmelima where the road links Sangmelima to other Towns and even to Congo. This will lead to the development of the town of Sangmelima and Neighbouring villages and towns.



PHOTOS 1: Christaller's central place theory

(https://www.researchgate.net/figure/The-hierarchic-ordering-of-space-according-to-the-Central-Place-Theory-of-Walter_fig4_350780423)

0.10.2.5. The Van Model (1970)

He presented a model for the development of transport links in North America whose development influenced the growth of an urban hierarchy. The model shows how favourable trading results due to a better transport infrastructure for North Americans due to better manufacturing facilities facilitated urban lifestyles. There is no doubt the development of transport network embraces development which could be social, economic etc. The van models were based and interested on how the construction of transport network has led to the growth of an urban hierarchy and how favourable trading results are recorded in North America due to transport network. This model is related to this piece work as a new road (Ketta-Djoum) road came up, which is also a multinational road linking the eleven Central African Union together.

0.11. METHODOLOGY OF THE STUDY

Methodology is the systematic study of methods and procedures employed in various pursuits. In the context of research, it encompasses the processes utilized to produce scientifically credible work. This includes the utilization of instruments, techniques, and sources to gather information for situational analysis, make recommendations, and draw conclusions. In this study, a systematic approach combining both primary and secondary data collection methods will be utilized. Secondary data collection involves sourcing

information from internet documents, articles, reports, books, and related literature. Primary data was gathered through the administration of questionnaires, observations, interviews, as well as informal and formal discussions. This section of the work outlines the research procedures, instruments, and challenges encountered in obtaining the study's findings as designed by the researcher. Methodology plays a crucial role in verifying the validity of hypotheses and testing various propositions.

Pre-survey of the study

The aim of the survey was to explain to the council officials, administrative officials, traditional authorities, and civil society organizations. A pre-test questionnaire was established, and 50 questionnaires were distributed to the people in the study area. The aim of these questionnaires was to ensure that the objectives and hypotheses set for the study were relevant. The pre-survey also aimed at evaluating the financial, material, and human resources necessary to carry out the research work.

Selection and training of field survey assistants

The study involved gathering diverse data and information at the Sangmelima council. It was specific in that it required attending numerous numbers of meetings and community events, many of which could occur simultaneously. Consequently, there was a need for field survey assistants. Considering the nature of the study, as revealed by the preliminary investigation, field assistants were selected and trained. In total, there were three field assistants, two of which are graduates from the teacher's training school (ENS) and the other one is a graduate from transport department in Sangmelima town. These assistants were chosen based on their background knowledge in the research and data collection. The quantity and quality of data collected were determined by the author.

All three field survey assistants were natives of Sangmelima. Like in many parts of Cameroon, certain information can be more readily obtained by the locals. Hence, it was necessary to select assistants from the area. The initial exploitative trip through the quarters and villages permitted the team to familiarize themselves with the terrain, refine the study's focus and establish valuable contacts, particularly with the municipal councillors, traditional authorities and civil society organizations. The author frequently assigned specific areas and periods to the field survey assistants for data collection.

Methods of data and information collection:

Both qualitative and quantitative methods were employed in this study. These methods were chosen not only for their specific strengths but also for their ability to gather

various forms of empirical material to achieve specific objectives. Over time, research in Geography, particularly in human Geography, has evolved. Previously, researchers relied on observation and interviews for data collection. However, today, there is a wide range of possibilities, including utilizing the internet, extracting existing literature, and conducting interviews and surveys via email. Visual imagery, such as television programs, also provides valuable information for geographic research. The research methods employed in this geographic study were practical, aiming to address questions of who, what, when, where, and how long.

This section of the work provides a detailed description of how information for the study was obtained. Many researchers argue that a scientific piece of work should outline the different steps used in its execution. In this study, the research began with exploring secondary documents addressing the same issue. Concurrently, observations were conducted in the study area to establish the scientific context of the research.

0.11.1.Secondary sources of data collection

It involved reading and analyzing literature related to the issue at hand. Drawing inspiration and adopting styles from other authors who discussed similar issues in different contexts aided and continues to aid the present study in establishing its scientific context. Theories, concepts, and models proposed by various authors enhanced understanding of the impact of constructing the road to Sangmelima town. Literature from other researchers assisted in drawing scientific conclusions based on information gathered from their perspectives. Reviewing existing literature facilitated the identification of unexplored areas or the need for in-depth case studies. In this study, reviewing case studies from other regions was necessary to gain insights that could be applied and compared with our findings.

0.11.1.1. Consultation of research works in the University library:

This involved reading and analyzing various research works and theses related to the topic at hand (Influence of Cameroon-Congo road on the socioeconomic development of Sangmelima).

A series of research works; both published and unpublished were examined regarding the strength and weaknesses of road construction across various countries worldwide, including Africa, Cameroon and especially south region and Dja and Lobo division in particular. Consulting these works enabled a thorough situational analysis of the research topic. Numerous unpublished works were assessed at the libraries of the University

of Yaounde 1, as well as recent master' and PHD works at the faculty of arts letters and social sciences (FALSS) at the University of Yaounde 1. Additionally, the departmental libraries of geography, sociology, history, and anthropology at the university of Yaounde 1 were utilized. These libraries, abundant in dissertations and theses on transport, provided insight into how the phenomena operates in other parts of Cameroon and globally.

0.11.1.2. Exploitation of audiovisuals and media

Radio, newspapers and television served as crucial sources of information and data collection for local and participatory development. This study delved into numerous newspapers, including Cameroon tribune, la voix du paysan, le messager, mutation and the post alongside international journals like Jeune Afrique Economique (JAE) all of which played a vital role.

Regarding audio-visuals media, Cameroon Radio Television (CRTV), a leading broadcaster, provided extensive coverage of meetings, seminars and conferences on decentralization. This enabled the researcher to access pertinent events and training seminars related to decentralization and local development. CRTV programs such as regional news was particularly informative, broadening the researcher's knowledge. Additionally, other audio-visual outlets such as Vision 4 and its program of club d'elite, canal 2 and its canal press and others were pertinent for the study as it provided valuable information about the topic. These various sources were complemented by modern information and communication technologies like the internet, further enhancing the research process.

0.11.1.3. Study of monthly, semester and annual reports

The study involved examining the monthly, semester and annual reports from various departments of the Sangmelima city council. Services provided by the city council were exploited. Specifically, visits were made to the computer unit of the Sangmelima council to gather information on building permits and road construction process. Another visit focused on gathering statistics on impounded cars and good over time. Exploitation achieves at the directorate of urban development allowed for data collection on the evolution of waste management, professional relationship with the government department related to town planning, environment, transport, hygiene and sanitation. It also involved assessing traffic circulation plans, combating illegal road occupation and maintaining public parks and gardens. Similarly, visits to the directorate of administrative and transport provided insights into the city council's human resources and their capabilities. Reports from various services

within the sub-divisional councils, including technical, hygiene, sanitation, treasury services and public relations were also analysed.

0.11.1.4. Internet Exploitation:

Regarding decentralization and local development, few libraries offer documents providing a comprehensive overview of these themes. However, the internet emerged as a solution to this issue. Through online resources, studies from different countries were accessed. Care was taken to select well-referenced information published by local, national, and internationally recognized institutions. The internet served to expand and enrich the scope of the present research.

0.11.2.Primary sources of data collection

Primary data sources were utilized because secondary data sources were unable to provide explicit and direct explanations for the work at hand. The researcher met with field assistants to test the questionnaire and clarify the research objectives, aiming to address any doubts. Questionnaires and interview guides were developed to address the research problem.

0.11.2.1. Direct observation and participant observation:

This method, one of the oldest used by social scientists, enables a thorough understanding of field phenomena through direct observation. In social sciences, visual aids such as snapshots accompany this method to visually depict field findings. Following observation, stakeholders were questioned to ascertain who, how, why, and when a particular project was analyzed. Direct observation can sometimes be unreliable due to the dynamic nature of people, especially in the study area. Therefore, the researcher supplemented direct observation with participant observation, involving assistants in the field.

0.11.2.2. Interviews:

This involved meeting individuals and asking questions about specific topics within the field of study, facilitating direct interaction between the researcher and relevant stakeholders. Research interviews were essential for this research as it provided insights into people's experiences, opinions, and behaviours. When conducting the interview, it was essential to create a comfortable atmosphere and open-ended questions were used to encourage detailed responses. An interview guide was prepared. An active listening permitted to dig deeper into participants' responses. After conducting the interviews, the recordings were transcribed accurately and the data was analysed systematically.

0.11.2.3. Focused group discussion

It was also utilized in the research. A Focus Group Discussion (FGD) is a qualitative research method in which a selected group of individuals engage in an in-depth discussion facilitated by a professional external moderator, focusing on a given topic or issue. FGD provides a structured, yet flexible environment for exploring complex issues, generating rich data, and understanding diverse perspectives. In this research work, the researcher took some time to prepare and plan for the FGD, which involved defining the objectives of the FGD, selecting participants who can represent relevant demographics or stakeholder groups, a designing of discussion guide with open-ended questions or topics to guide the conversation. This permitted the discussion to remain focussed and productive. Participants were encouraged to interact with one another, share personal experiences and build upon each other's responses. The researcher who acted as a skilled moderator facilitated the discussion, ensuring that all participants have the opportunity to contribute while maintaining a respectful and inclusive atmosphere. During the FGD, participants were engaged in structured conversations guided by the discussion guide. The researcher who is the moderator encouraged active participation and managed time effectively to cover all planned topics. One of the advantages of the FGD is that it provides in-depth exploration of complex issues which may not emerge through quantitative methods alone. It also brings about diverse perspectives, flexibility unlike structured surveys, and real time feedback. In summary, focused group discussion is a valuable qualitative research method for exploring complex issues, generating rich data and gaining insights into participants' perspectives.

The FGD of this study was composed of 12 people. The focused group discussion was held in the Sangmelima subdivisional council.

Another was held in the Administrative center of Sangmelima town, which was composed of 5 people who were working at the Divisional Officer's office and some quarter heads. Another was held in Akon1 and 2 which constituted mainly bike riders, taxi drivers and waiters in the snack-bars who gave relevant information concerning the function of the town and links with the objectives of the study.

0.12. POPULATION OF THE STUDY AREA

The population of the study area refers to the total number of individuals or entities residing or operating within a geographic boundary defined for the research. The method by which the population of this study was obtained is through the census data.

The population of the study area was composed of about 17 localities found in the Sangmelima town. These localities included; Akon 1, Akon 2, Akon X, Base, Bissono, Administrative Centre, Ebolemgwan, Lobossi, Mbeli'I, Monavebe, Otoakam, Camp chic, amongst others. The 17 localities constituted a total population of 51333 inhabitants, and regrouped 13647 households (BUCREP, 2010 population and housing census). However, six of those localities were samples out. The localities sampled for the study were; Akon 1, Akon2, Administrative centre, Lobossi, Mbeli'I, Otoakam. The localities were selected based on the nearness or proximity to the highway road. The table 3 below shows the population and housing in the sampled localities.

Table 4: Population of the study area

Number	Localities	Number of households	Population		
			Males	Females	Total
1	Akon 1	1118	2231	1835	4066
2	Akon2	1448	2714	2141	4855
3	Administrative centre	140	261	268	529
4	Lobo-si	3116	6054	5729	11783
5	Mbelii	227	493	541	1034
6	Otoakam	375	677	622	1299
Totals		6,424	12,430	11,136	23,566

Source; BUCREP, 2010

Developed by the researcher (K. MELO 2023) from BUCREP ,2010 and field work 2023

0.12.1.Sample of The Population of the Study Area

The sample size for this study was drawn from the 6424 households in the study area, following the 2010 population and household census. The reason for the use households was that, it is easier to administer questionnaires in households is much easier than approaching individuals on the streets, which also reduces costs and facilitates the research

process. Consequently, 3% of the households were selected to form the sample population, providing a miniature cross-section of the entire population.

The reason for the use of a 3% sample size was chosen in accordance with the postulation of Nwana (1982: page 92). According to Nwana,

- For populations in the hundreds, a sample size of 40% or more should be used;
- For populations in many hundreds, a 20% sample suffices;
- If the populations are in thousands, a 10% sample is adequate, and
- If population is in several thousands, a 5% or smaller sample is appropriate (Nwana, 1982 page 92).

Moreover, selecting a 3% sample size was also motivated by the challenges faced in the south region of Cameroon due to socio-political crises. For instance, the crisis of the 24th May 2023, making it difficult to administer questionnaires to a large population.

The 3% sample size for this study was determined by applying the formula:

$$X * 3/100,$$

Where

- ‘X’ represents the number of households,
- represents the multiplication sign and
- 3 represent the sample size chosen.

From the total number of households, a 3% sample size was selected. This sample size gave 192 households to which questionnaires were administered. This sample helped the researcher to know the total number of questionnaires to be taken to the field for effective administration.

Table 5: Sample of the population of the study area

Number	Localities	Number of households	Population	3% sample size	Number of respondents
1	Akon 1	1118	4066	34	29
2	Akon2	1448	4855	43	38
3	Administrative centre	140	529	4	4
4	Lobo-si	3116	11783	93	81
5	Mbeli'i	227	1034	7	6
6	Otoakam	375	1299	11	10
Totals		6,424	23,566	192	168

Source; BUCREP 2010

Developed by the researcher from table 5

As seen on the table above, the study pointed out six localities which include; Akon 1, Akon 2, the Administrative center, Lobo-si, Mbeli'I, Otoakam. The six localities gave a total of 6424 households with a population of about 23,566 persons. The 3% sample size of the total population gave 192, which determined the number of questionnaire that were brought to the field. Out of the 192, 168 responded. This gave a percentage of 87.5 (87.5%).

The mathematics went as follow;

Formula; $X \times 3 \div 100$

$$1) \text{ Akon 1; } \quad 1118 \times 3/100 = 33.54 \\ = 34.$$

$$2) \text{ Akon 2; } \quad 1448 \times 3/100 = 43.44 \\ = 43$$

$$3) \text{ Administrative centre; } \quad 140 \times 3/100 = 4.2 \\ = 4$$

$$4) \text{ Lobo-si } \quad 3116 \times 3/100 = 93.48 \\ = 93$$

- | | |
|-------------|--------------------------------------|
| 5) Mbeli'i | $227 \times 3/100 = 6.81$
$= 7$ |
| 6) Otoakam; | $375 \times 3/100 = 11.25$
$= 11$ |

The results of these were all rounded up or down to have a whole number.

$$34+43+4+93+7+11=192$$

0.12.2. Questionnaire Survey

The decision to employ a questionnaire for this research was driven by the aim of gathering substantial quantitative data while also capturing qualitative insights to some extent. The questionnaire was meticulously crafted to gauge the respondents' comprehension of the transportation process. It encompassed a mix of closed-ended and open-ended questions, providing ample or more than enough opportunities for respondents to articulate their perspectives.

The distribution strategy adopted for the questionnaire involved a face-to-face approach, renowned for its adaptability and simplicity. This enabled the researcher and field assistants to assist respondents in completing the questionnaire, resulting in a commendable response rate of approximately 70%. For the remaining 30% of households unable to complete the questionnaire immediately, a drop-and-pick method was employed. Alternative methods such as postal mail and internet surveys were not considered viable for this study.

0.12.3. Sampling Technique for the Survey Instrument

Sampling played a pivotal role in the primary data collection process. It was essential to juxtapose the viewpoints of key stakeholders with those of ordinary citizens on the streets of Sangmelima to gain a comprehensive understanding of the town's transportation dynamics. The target population comprised the residents of Sangmelima, necessitating the adoption of a sampling technique to streamline data collection.

The chosen sampling technique was simple random sampling, as advocated by Francis, which minimizes systematic errors and provides estimates closer to zero. Given the lack of numbered houses in the city, systematic and stratified sampling methods were impractical. In simple random sampling, all individuals within the target population have an equal chance of inclusion in the sample frame.

The field assistants underwent thorough training in questionnaire administration, ensuring they were well-equipped to execute their roles effectively. Questionnaires were distributed across both urban and semi-urban areas of the subdivisions. Evening hours, when household heads returned from work, were identified as optimal for questionnaire administration, with weekends, particularly Sundays after church services, being favourable in certain areas.

Challenges arose due to low literacy level and the lack of bilingualism among some respondents, particularly in semi-urban Sangmelima. In such cases, the research team provided translations of questions into French language and also in the bulu language, with responses recorded in English. Despite these challenges, the assistance of field assistants and council development officers, who were well-known within the community, facilitated data collection.

0.12.4. Questionnaire Response Rate

Multiple field trips were conducted by the researcher, supplemented by the presence of field assistants residing in the study area. The high response rate can be attributed to the familiarity of respondents with the field assistants and the collaborative support of council development officers. Following validation and cross-checking, 168 questionnaires were deemed suitable for analysis, resulting in an impressive response rate of 87.95%.

0.13. Data Processing, Presentation, and Analysis

In this research, various types of data were collected and underwent different treatments before being presented, analyzed, and interpreted. These data types primarily included qualitative and quantitative data, comprising interview transcripts, focus group discussions, questionnaire responses, cartographic information, and observational findings. Each type of data was handled differently and presented using graphics, figures, and tables.

0.13.1. Processing, Presentation, and Analysis of Interview, Focus Group Discussion, and Observation Data

Qualitative data treatment commenced with data coding using the Strauss method of open system data coding. This involved identifying, categorizing, and classifying respondents' responses and major themes. These categories were manually recorded and organized according to the study objectives, allowing for the formation of constructive codes derived from participants' actual words. The in vivo coding method was preferred for its effectiveness in capturing participants' voices and conveying their messages directly. The

coded data, aligned with the study objectives, were then presented and analyzed across the study's chapters using inferential and descriptive statistics, with meaningful conclusions drawn from the results.

Observational data were captured using a digital camera and enhanced using Photoshop software to improve clarity and visibility.

0.13.2. Treatment, Presentation, and Analysis of Cartographic Data

Cartographic data were obtained using a Global Positioning System (GPS) to collect waypoints on motor parks, fuel sales points, repair garages, and spare part shops in Sangmelima Sub-division. These data were processed and spatialized on cartographic shape files, allowing for spatial analysis and map presentations. Road network and relief maps were sourced from the National Institute for Cartography (NIC) and integrated into the cartographic shape files for further spatial analysis

0.13.3. Treatment, Presentation, and Analysis of Questionnaire Data

The questionnaire data, primarily quantitative, underwent a concise treatment and presentation process. Responses to questions with multiple options were weighted for quantification. The compiled statistics were input into Microsoft Excel to calculate totals for villages and clusters. Tables presenting statistics, totals, and percentages were generated, and various graphs such as pie charts, bar charts, and areas were created for analysis.

The table below shows the different instruments and their uses in this work.

Table 6: Tools/ instruments and uses

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

Source: conceived by the author 2023

The actual work commenced with a plan designed to provide the reader with a clear overview of the content, starting from a general introduction and leading to a general conclusion.

0.14. Plan of work

The introduction of this work provides an overview of the study, including the background, scope, problem statement, research questions, objectives, and hypotheses. Additionally, it reviews relevant literature, concepts, and theories related to the topic, while also outlining the research methodology.

0.14.1. Dissertation Chapter Layout

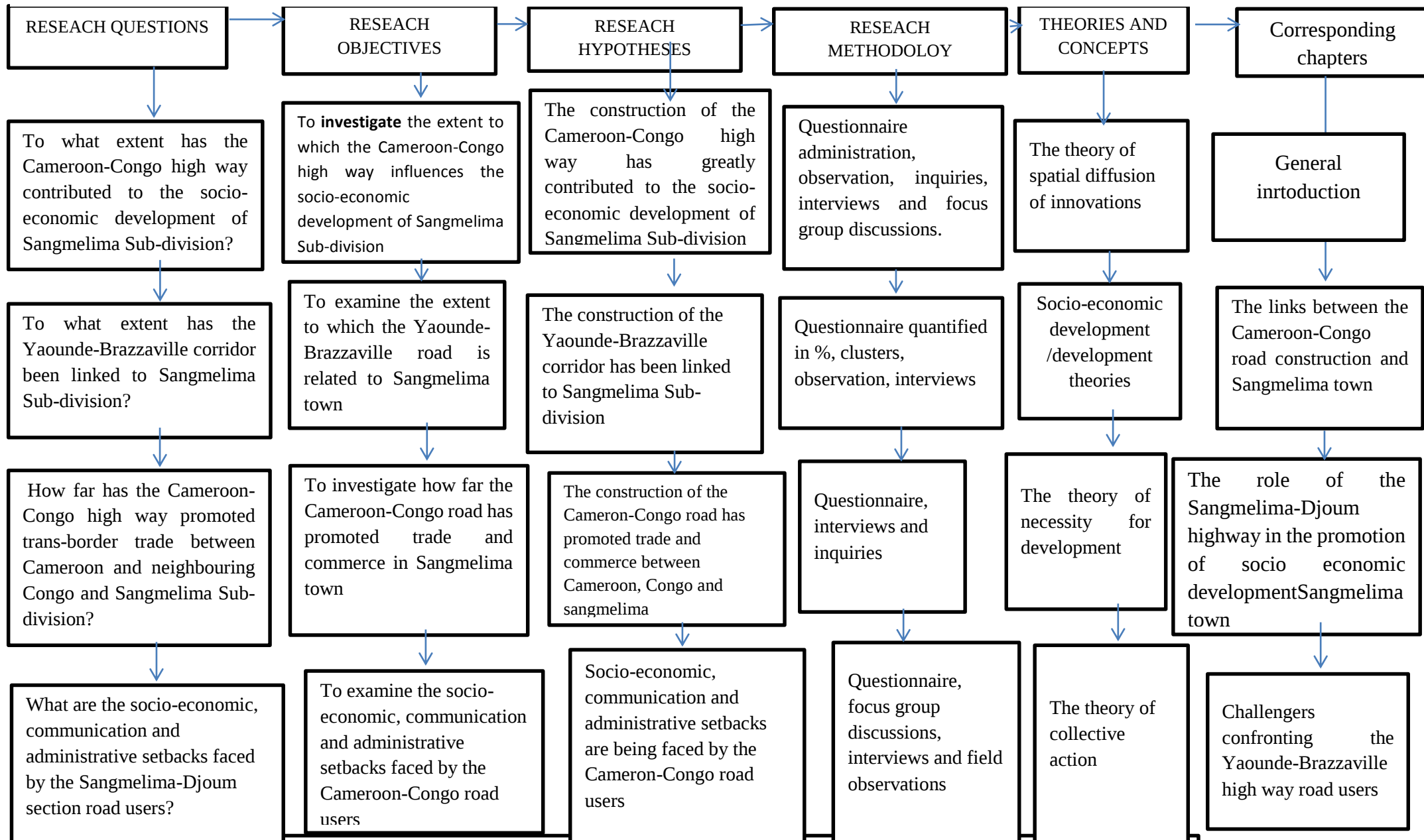
The study comprises three chapters, each subdivided into sections. These sections typically include an introduction, discussion of the chapter's presented data, and a concluding section that summarizes key points and introduces the subsequent chapter.

Chapter one delves into the implications of constructing the Trans-African Highway (TAHW) via Sangmelima and its impact on urbanization rates in the sub-division. Utilizing satellite images and population data, this chapter demonstrates the urbanization rate's evolution since the road's construction. It identifies factors influencing urbanization and explores socio-economic benefits and related urban issues, leading into the next chapter.

Chapter Two examines how the highway construction has affected trade and commerce internally and externally. It discusses the highway's contributions to trade development and analyzes various businesses established in the Sangmelima sub-division, including cross-border trade and challenges such as illicit goods trafficking. The chapter also addresses mobility and the circulation of goods and people.

Chapter Three assesses challenges faced by users of the Yaounde-Brazzaville highway. These challenges are examined across administrative, socio-economic, and communication dimensions. Data collected, presented, and analyzed in this chapter validate hypotheses related to highway users' challenges

The general Conclusion verifies hypotheses, summarizes findings, draws conclusions, offers recommendations, and includes references

Table 7: The synoptic or matrix table

Source: Developed by the author, inspired by masters 2 classes

CHAPTER 1: THE LINKAGES BETWEEN THE CAMEROON-CONGO ROAD INFRASTRUCTURE AND SANGMELIMA TOWN

1.0. Introduction

A major road cannot pass through a forest without the cutting down of trees. The cutting of trees permits the road to reach its destination and thereby having impacts both on the natural environment and also on man.

It is commonly asserted that where roads are built, development ensues. This development often entails rapid urbanization along the network of roads. The extent, determinants, pace, and spatial distribution of urban growth or urbanization are significant considerations for policymakers. Accessibility, local interactions, and spatial policies are argued to be the primary factors influencing contemporary land use changes (Verburg et al., 2004). The construction of the Cameroon-Congo highway has notably spurred urbanization in Sangmelima, particularly along its route. Additionally, it has fostered the establishment of secondary roads linking rural areas. Transport infrastructure is believed to stimulate and direct urban growth by enhancing accessibility (Anas et al., 1998). This belief is evidenced by a longstanding tradition of policies aimed at steering urban growth through investment in transport infrastructure. It is also recognized that urbanization tends to occur in proximity to existing urban areas, as seen in the concentric development of cities or the emergence of suburbs near major cities.

This chapter aims to investigate the influence of the Sangmelima-Djoum highway on the urbanization of Sangmelima and its associated challenges. This investigation aligns with Hypothesis 1, which posits that the Yaounde-Brazzaville highway has significantly contributed to urbanization in Sangmelima, along with its associated challenges. The data collected in support of this hypothesis is presented herein to validate it. The chapter comprises an introduction, three sections, and a conclusion. The introduction outlines the key concepts and the chapter's structure.

1.1 The Construction of the Cameroon-Congo Highway and Urbanization in the Sangmelima Town

The importance of transport infrastructure to a nation cannot be overstated, as efficient transport facilities serve as catalysts for development and urbanization. Therefore, it is essential to assess how most highways in Cameroon have led to spatial urbanization in the affected areas. Prior to the construction of the multinational highway, the urbanization rate in the town and its environs was sluggish. Indeed, much of the Sangmelima Sub-Division was enclave, hindering its socio-economic development. However, the construction of the highway triggered rapid development, particularly as more people began moving into Sangmelima.

According to our survey findings, respondents indicated that the rate of urbanization in Sangmelima accelerated during and after the construction of the highway (*see Figure 2*).

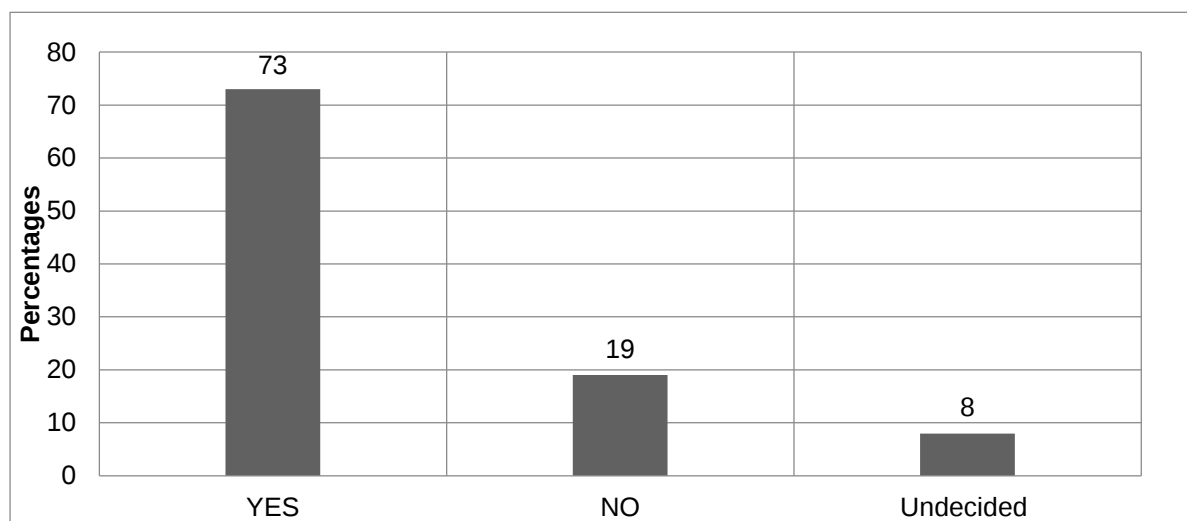


Figure 2: Respondents' perception on the urbanization of Sangmelima town

Source; Field work 2023

From Figure 2, it is evident that 73% of respondents believed that the construction of the Sangmelima-Djoum highway has accelerated urbanization in Sangmelima. Interviews with certain respondents confirmed this notion, stating that the highway has attracted a significant number of people from neighbouring villages and rural areas to Sangmelima, thus fuelling urbanization. Additionally, the data from the table indicates that 19% of respondents did not perceive any growth or urbanization in Sangmelima. This may be attributed to their limited time in the town, preventing

them from noticing the changes. Another 8% of respondents were undecided about whether urbanization occurred due to the highway construction. As highlighted by Anas et al. (1998), transport infrastructure is known to stimulate and direct growth by enhancing accessibility, aligning with our findings that transport infrastructure in Sangmelima has contributed to its urbanization.

Given that urbanization involves an increase in the proportion of people living in towns, it was essential to compare the population of Sangmelima over several years to assess if urbanization rates have indeed increased following the construction of the highway. Table 6 presents the population evolution of Sangmelima from 1970 to 2019.

Table 8: Population evolution in Sangmelima town

Years	1970	1976	2001	2005	2019
Population	9000	14700	41800	51333	132513

Source; BUCREP (2005) and projection (2005-2019)

Table 9 illustrates a general population increase in Sangmelima Sub-Division from 1970 to 2019. Sangmelima's population is growing rapidly because of both temporal and permanent migration, provoked by the different roads linking Sangmelima and other regions of the country and even with other countries. All of these have resulted to a diversification of its socio-economic products, making it the main focal point of the Dja and Lobo division. Before the construction of the Cameroon-Congo highway, urbanization was sluggish. Between 1970 and 1976, the population increased by 5700. Subsequently, from 1976 to 2001, there was a rapid increase of 27100, urbanization accelerated. From 2001 to 2005 there was a population increase of 9533. However, from 2005 to 2019, urbanization rates increased significantly to 81180, thanks to the road construction which brought about socio-economic development in the Dja and Lobo division as a whole. This data is also graphically represented to visualize the urbanization trend in Sangmelima Sub-Division, predominantly impacting Sangmelima town (see Figure 3).

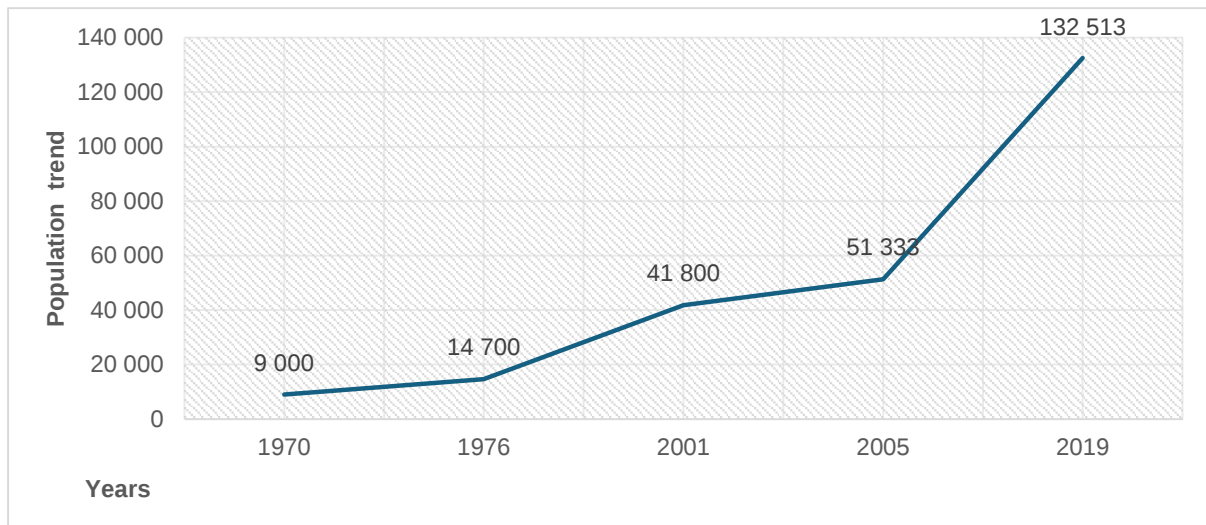


Figure 3: Population trends in Sangmelima town following the construction of the highway

Source; BUCREP (2005) and projection (2005 to 2019). Computed from table 9

Figure 3 depicts the population growth pattern in Sangmelima town, influenced by the construction of the highway. From 1970 to 2005, urbanization has been slowly progressing, but from 2005 upward, the rate of urbanization has been increasing more rapidly. Respondents agreed with the study that it is thanks to the road construction that the population has been booming for the past years, especially since the completion of the road network.

Table 9: Respondents' perception on the urbanization of Sangmelima town

Localities	Number of respondents	Do you agree that the town of Sangmelima has experienced urbanization due to the construction of the highway?		
		Agree	Disagree	Undecided
Akon1	29	20	6	3
Akon2	38	26	9	3
Admin centre	4	3	1	0
Lobossi	81	63	13	5
Mbeli'i	6	3	2	1
Otoakam	10	8	1	1
Total	168	123	32	13
%	88	73	19	8

Source; field work 2023

According to Table 10, 73% of respondents affirmed that Sangmelima town has experienced urbanization since the construction of the Yaounde-Brazzaville highway in 2012-2017. Interviews indicated that the reasons for this urbanization were diverse, including trade and commerce, transportation services, and the allure of adventure, among others, which attracted many from rural areas to the town, bringing about rural exodus due to the construction of the highway corridor. Only 19% of respondents disagreed with the notion that the highway construction sparked urbanization in the sangmelima Sub-division, especially in sangmelima town, while 8% were indecisive about its influence on urbanization. These respondents are likely those who have not spent enough time in the sub-division to observe and understand the changes, particularly the flow of population in the area.

These findings align with Dena's (2017) observations, which suggest that road networks typically have a stronger influence on urbanization than rail networks due to their larger scale, finer granularity, and higher share in the number of traveled trips. Road networks have the capacity

to influence existing urban areas, encourage further urbanization, and exert a stronger attraction than smaller conurbations. Urbanization is not solely driven by transport accessibility and the allure of existing urban areas but is also influenced by spatial policies. Against this backdrop, this study investigated the reasons why many people migrated to Sangmelima town after the construction of the highway and the socio-economic development benefits. To accurately assess the rate of urbanization in the sub-division, particularly in Sangmelima town, satellite images were utilized (see Figure 4,5 and 6).

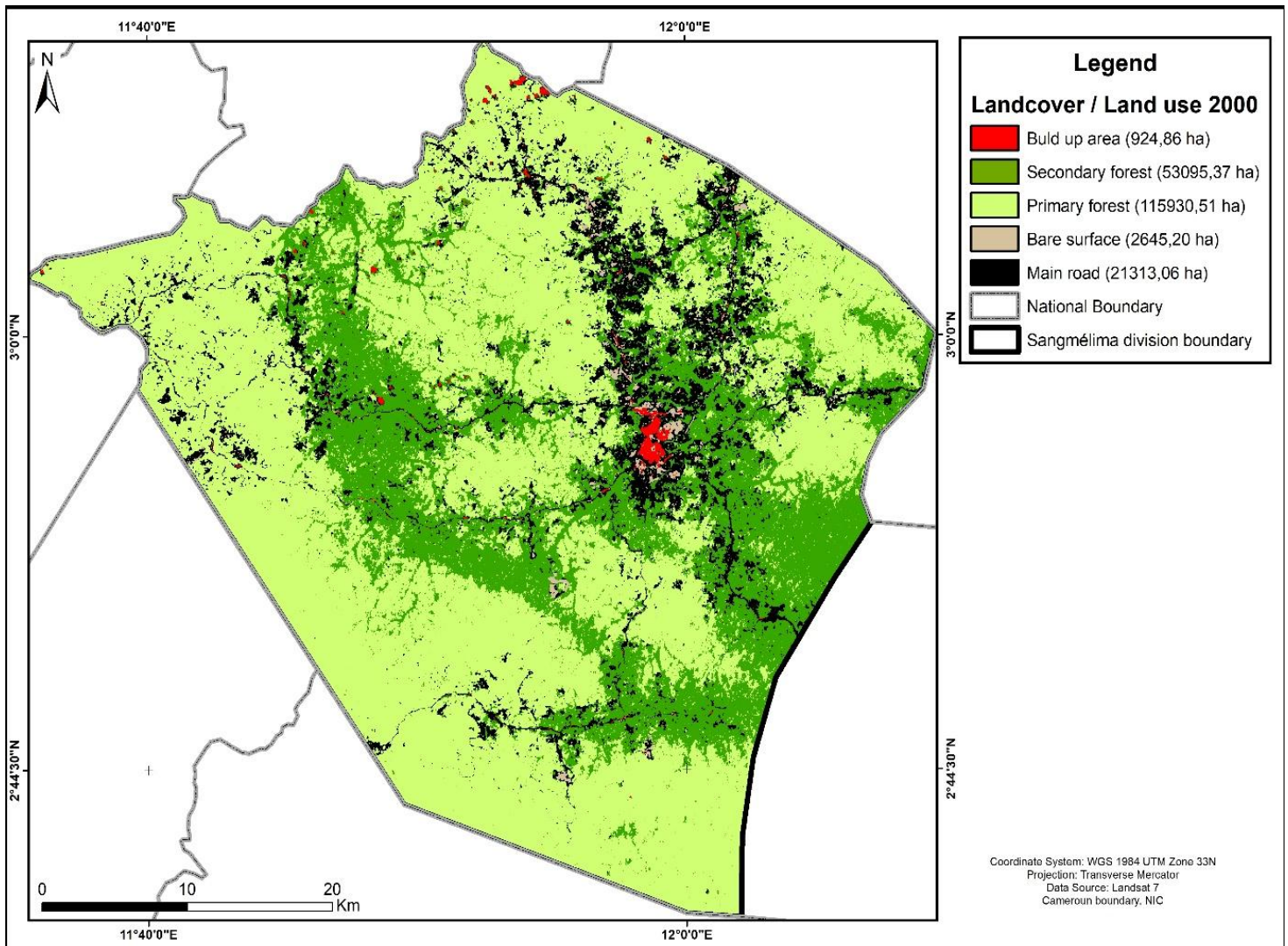


Figure 4: Landsat image of Sangmelima town before the construction of the road highway in 2000

Source; modified from NIC, landsat (2000), google earth and field survey by K. MELO 2023

From the satellite image depicted in Figure 4, one can observe that during this period, the built-up area was relatively small, likely due to limited transportation systems. Most settlement clusters were concentrated in the northern part of the sub-division, particularly Sangmelima town. As previously mentioned, transportation infrastructure plays a crucial role in the socio-economic development of any area. The road network in this region was inadequate, thereby hindering urbanization and socio-economic progress.

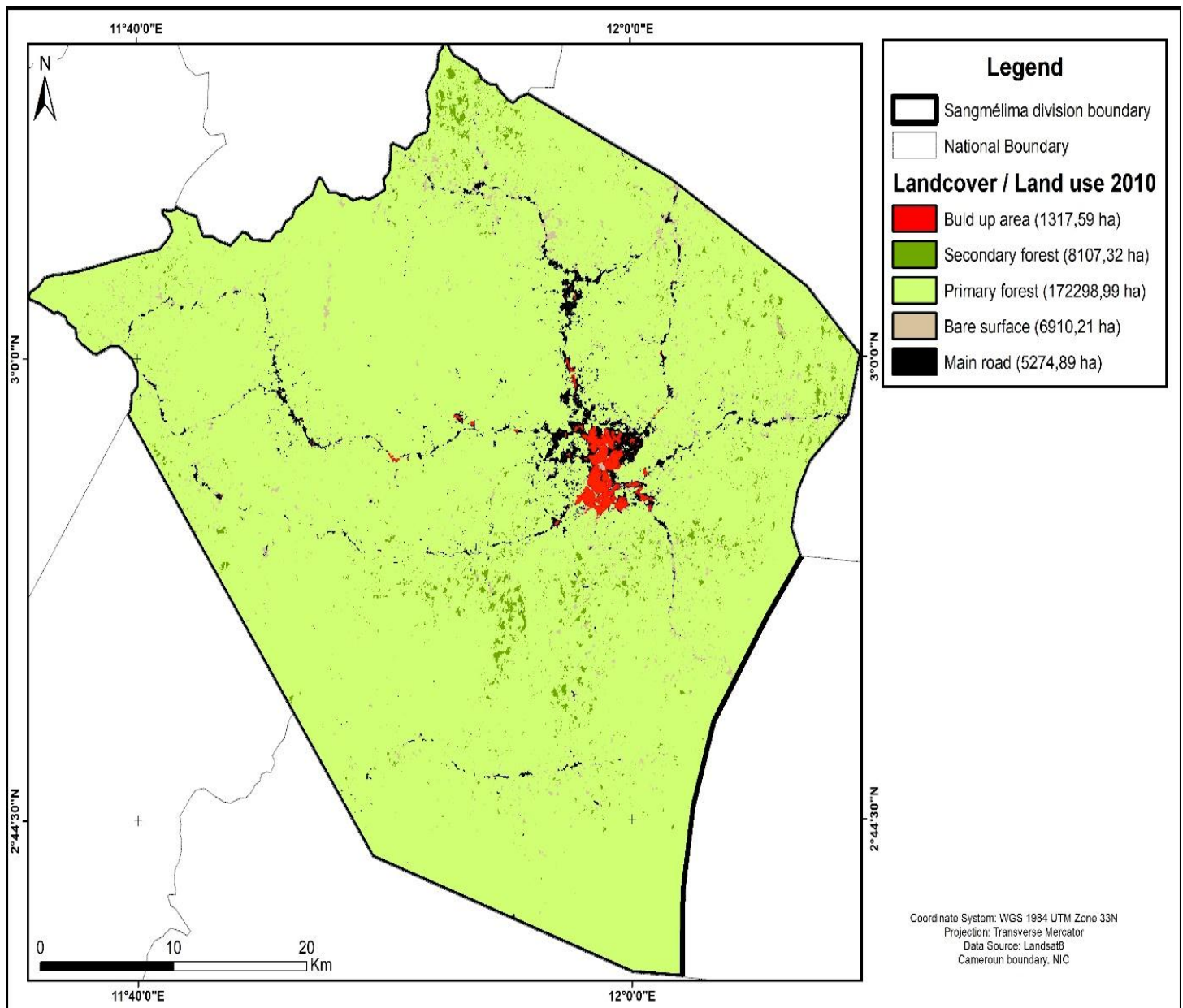


Figure 5: Landsat images of Sangmelima town before the construction of the highway in 2010

Source; modified from NIC, landsat (2010), google earth and field survey by K. MELO 2023

Following the construction of the highway in 2012, the rate of urbanization in the sub-division surged, leading to a rapid expansion of the urban environment towards the outskirts (see Figure 6).

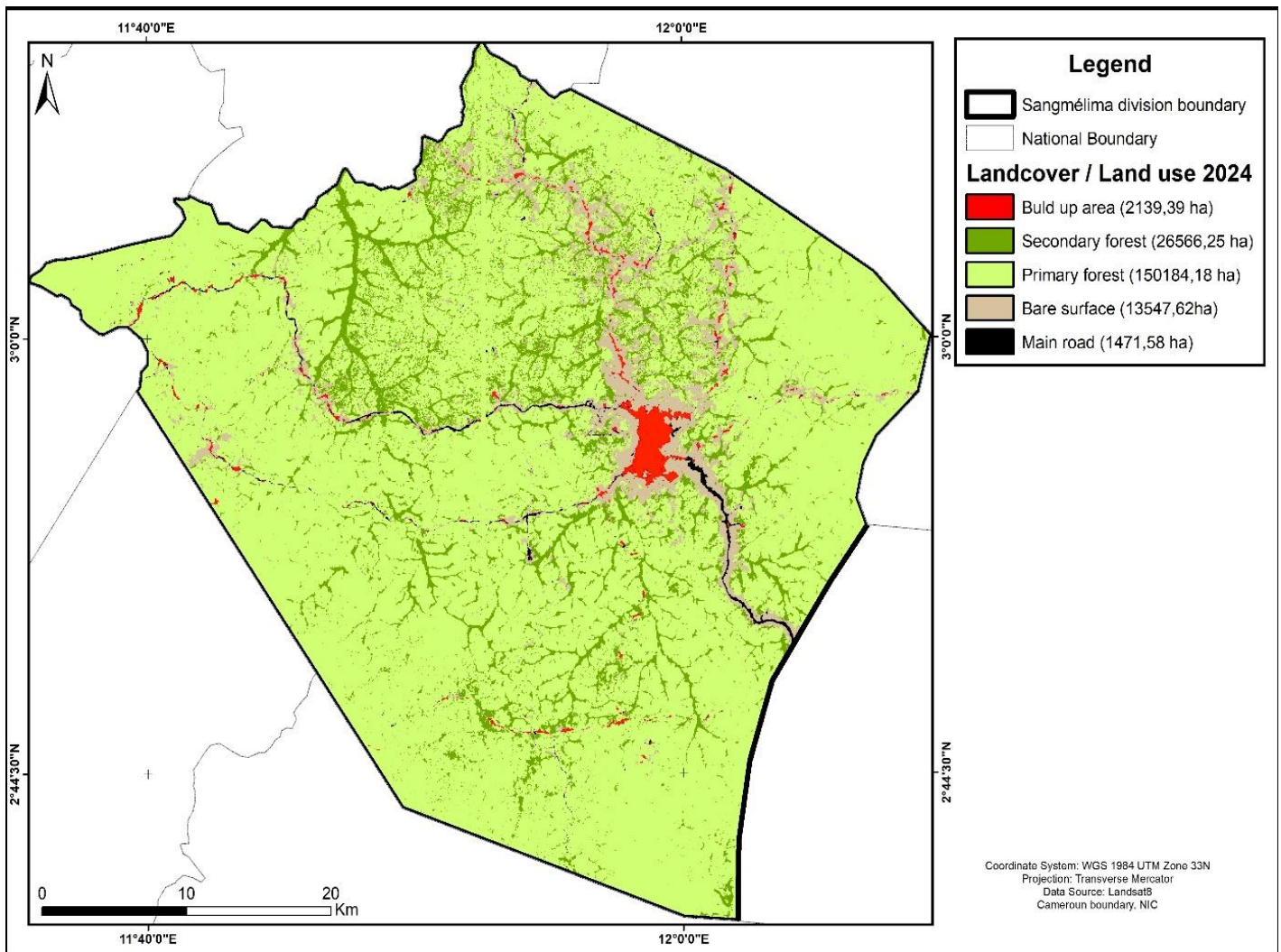


Figure 6: Landsat image of Sangmelima town after the construction of the road highway 2024

Source; modified from NIC, landsat (2023), google earth and field survey by K. MELO 2023

As illustrated in Figure 6, clear evidence indicates a significant increase in the rate of urbanization in Sangmelima Sub-division, especially in Sangmelima town and along the highway, over time. This serves as compelling evidence that the construction of the highway in this sub-division accelerated urbanization and, consequently, socio-economic development in the area. Interviews, focus group discussions, and observations corroborate these findings, all pointing to an increased rate of urbanization in Sangmelima Sub-division, particularly in sangmelima town, where the highway traverses. Therefore, it was essential to juxtapose these images for a better understanding and appreciation of the urbanization trend over the years (see Figure 7).

Table 10: The landuse/landcover of Sangmelima town before and after the construction of the MNHW

Year	2000	2010	2024
Build up area (ha)	924,86	1317,59	2139,39
Secondary forest (ha)	53095,37	8107,32	26566,18
Primary forest (ha)	115930,51	172298,99	150184,18
Bare surface (ha)	2645,20	6910,21	13547,62
Main road (ha)	21313,06	5274,89	1471,58

Source; conceived from Landsat and projections

The above table shows the evolution of land and how forest is being exploited in Sangmelima town over time, following the Yaounde-Brazzaville corridor.

It can be seen that from 2000, the built-up area was relatively small as compared to that which is present now (2024). From the year 2000 to 2010, there has been an increase of 392.73 hectares of land constructed in Sangmelima subdivision and most of these buildings are located in Sangmelima town, going towards Djoum. From 2010 to 2024, built up areas increased from 1,317.59 hectares to 2,139.39 hectares respectively. This is likely associated to many factors such as population growth, urbanization, economic development government policies, technological advancements and also infrastructural development. Some respondents in Sangmelima town (Akon 1 and 2) and also from the Sangmelima council confirmed with the study that the built-up areas drastically increased after the launching of the Yaounde-Brazzaville road corridor.

Secondary forest decreased from 53,095.37 to 8,107.32 (hectares) and from 8,107.32 it later increased to 26,566.18 in 2000, 2010 and 2024 respectively.

Primary forests have also witnessed a change as time went by. In 2000, the forest covered 115,930.51 hectares, in 2010 primary forest covered 172298.99 hectares and in 2024 it covered 150184.18 hectares.

Bare surfaces have witnessed a progressive increase from 2000 to 2024. In 2000, bare surfaces covered 2645.20 hectares of land, in 2010 it covered 6910.21 and 13547.62 hectares in 2024.

The main road, covered 21313.06 hectares in 2000, 5274.89 in 2010 and 1471.58 in 2024, showing a progressive decrease between the two decades.

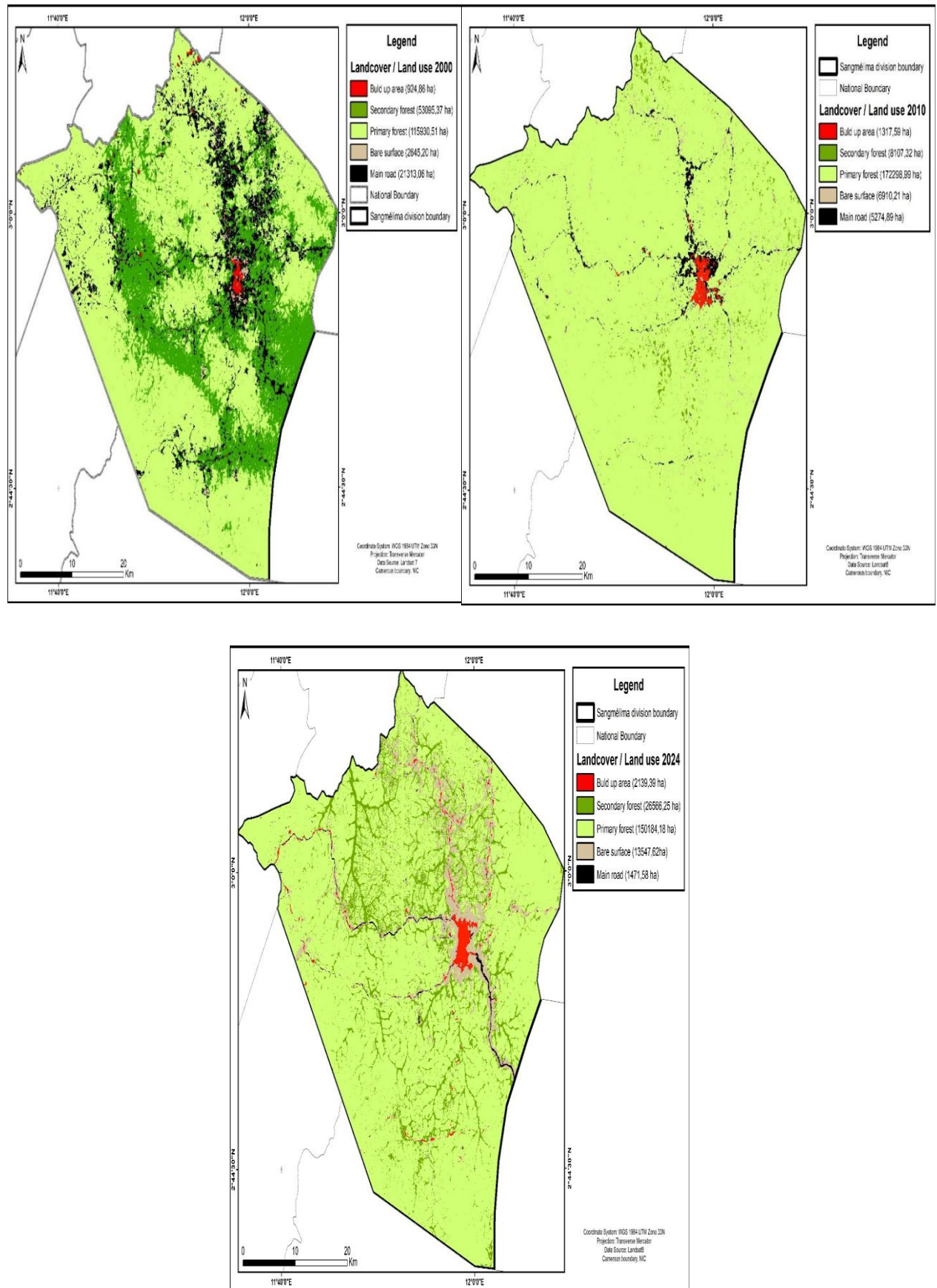
Table 11: Differences in landuse/landcover in Sangmelima

Years	2000-2010	2010-2024
Built-up area	392.73	821.8
Secondary forest	-44988.05	18458.86
Primary forest	56368.48	-22114.81
Bare surface	4265.01	6637.41

Source; developed from table 11

As seen from the above table, the landcover in Sangmelima has not been stable for the past years. They varied from one year to the other. The built up area has witnessed an increase since the year 2000, that is, a difference of about 392.73 hectares between 2000 and 2010. The difference between 2010 and 2024 has more than doubled that of the previous decade (821.8 hectares)

The figure below (figure 7) shows the three landuse and cover situation of Sangmelima before the road construction (2000) after the road project started (2010) and after the road construction (2024)



Source; modified from NIC, landsat (2000), google earth and field survey by K. MELO 2023
 Figure 7: land use and cover situation in Sangmelima for 2000, 2010 and 2024.

The above figure is a combination of the three images from the year 2000 to the year 2024. It can be seen that before the road construction in the year 2000, the built up area was relatively small. But as the road project was launched, people started gaining more interest on Sangmelima town, especially towards the road corridor. This led to an increase in the built up areas right up to today; it is still in an increase as more people plough the road and some still settle there. Respondents confirmed with the study that urbanization in Sangmelima town has been as a result of the road construction.

1.1.1 Determinants of Urbanization in Sangmelima Town after the Construction of the Cameroon-Congo Highway and Some Socio-Economic Benefits

It is well-established in economics that cities enhance productivity and consumption benefits through various mechanisms. Within this framework, all proposed mechanisms for agglomeration effects revolve around one essential feature of the urban environment: it facilitates short-distance interactions between economic agents. This feature is central to the main theories, whether they focus on production or consumption. In his seminal typology, Marshall (1920) suggested knowledge spill overs, labour market externalities, and production linkages as drivers of urban productivity. More recently, Duranton and Puga (2004) emphasize the importance of sharing, matching, and learning.

It is in this context that the construction of the multinational highway is perceived as advantageous to urbanization and related socio-economic benefits (see Figure 8).

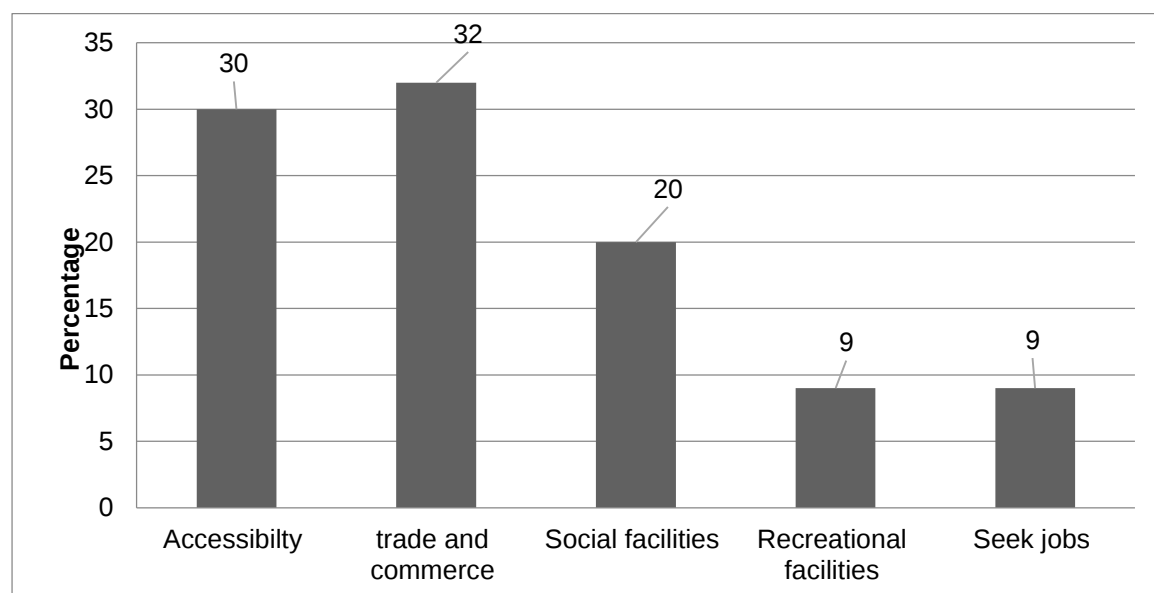


Figure 8: some determinants of urbanisation in Sangmelima after the construction of the highway

Source; developed by the author (2023)

Figure 8 illustrates that after the construction of the Yaounde-Brazzaville highway, trade and commerce (32%) emerged as the primary reason why many people migrated to Sangmelima town to engage in buying or selling goods such as cocoa which is very common. The highway provided an opportunity for people from distant places to come and trade, especially in agricultural products, as agriculture thrives in this sub-division. Interviews conducted confirmed this, with a significant number of respondents attributing urbanization in Sangmelima town and the sub-division to trade and commerce.

Additionally, accessibility (30%) was another prominent reason why people moved to Sangmelima town after the construction of the Cameroon-Congo highway project. Improved accessibility allowed for easier movement of goods and people within the town and neighbouring areas, further enhancing trade and commerce in the sub-division, particularly in Sangmelima town, where the construction of the highway has led to the establishment of numerous markets.

These two outstanding determinants, accessibility and trade and commerce, are crucial for conducting detailed analysis based on the responses of the respondents (see Table 13)

Table 12: Respondents' opinion on trade and commerce and accessibility resulting from the construction of the Yaounde-Brazzaville corridor

Localities	Number of respondents	Do you agree that the town of Sangmelima has experienced an increase in trade, commerce and accessibility due to the construction of the highway, which has promoted socioeconomic development in the subdivision?		
		Agree	Disagree	Undecided
Akon1	29	20	7	2
Akon2	38	23	11	4
Admin centre	4	4	0	0
Lobossi	81	59	16	6
Mbeli'i	6	4	1	1
Otoakam	10	7	1	2
Total	168	117	36	15
%	88	69.5	21.5	9

Source; fieldwork 2023

Table 13 clearly indicates that the construction of the multinational highway has had a significant impact on the socio-economic development of Sangmelima Sub-division, with 69.5% of respondents attributing it to improved accessibility and increased trade and commerce in Sangmelima town. Non-respondents accounted for only 21.5%, while 9% of respondents were unsure whether these factors effectively contributed to the socio-economic development of the sub-division.

Referring back to Figure 7, it is evident that the presence of social infrastructure or facilities (20%) in Sangmelima town, resulting from the construction of the highway, also played a substantial role in attracting people to the town and the sub-division as a whole. Social infrastructure includes hospitals, piped water, and electricity in certain areas, which were extended due to the construction of the highway, among others (see Plate 1).



K. MELO 2024

Plate 1: The Sangmelima district hospital, a result of the highway construction

Plate 1 depicts the Sangmelima District Hospital, which underwent expansion and improvement during the construction of the highway. This was due to the increased demand for health services resulting from the influx of people into Sangmelima town. Interviews with medical personnel at the hospital revealed that the construction of the highway significantly contributed to the hospital's enhancement, as it facilitated easy access for patients. During interviews, it was emphasized that before the highway's construction, Sangmelima was isolated, making it challenging to access basic services such as healthcare and markets. However, now the area is more accessible, allowing people to easily access services. Similar sentiments were expressed by the Lord Mayor of the municipality and the Divisional officer of Sangmelima.

This serves as compelling evidence that the construction of the highway has greatly contributed to both the social and economic development of the sub-division. Recreational facilities (9%) and job opportunities (9%) also played significant roles in driving urbanization in Sangmelima town, which, in turn, contributed to socio-economic development. Today, various job opportunities exist in the town, and there is a wide array of recreational facilities, enhancing the overall socio-economic development of the sub-division. These driving forces of urbanization have concurrently contributed to socio-economic development in various ways. Therefore, it is imperative to investigate the different dimensions of socio-economic development ignited by the construction of the highway.

1.2 The dimensions of socio-economic development ignited by the construction of the Sangmelima-Djoum highway

It is commonly said that where a road passes, development follows. This saying holds true for the construction of the trans-African highway, where development manifested in various ways as a result of the road construction. It was therefore crucial to investigate the various ways in which the highway influenced socio-economic development in the sub-division. Han et al. (2015) noted that urban areas are dynamic, complex structures, and are key to growth in physical, economic, and population terms, known as urban growth. Urban growth is a complex process involving spatial-temporal changes in urban areas' socio-economic and physical components, catalyzed by various drivers and underlying factors. Among these, transport is considered a key driver of urban growth, igniting socio-economic development in different ways (see Figure 9).

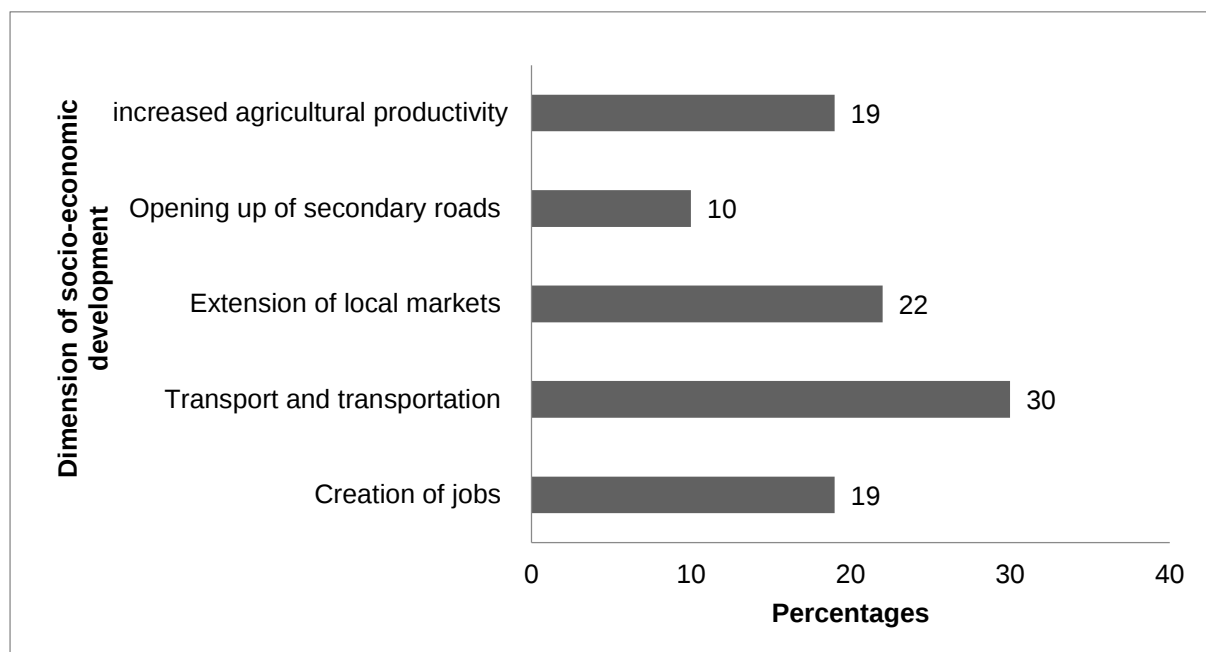


Figure 9: Some determinants of socio-economic development induced by the construction of the road corridor in Sangmelima

Source; fieldwork 2023

From Figure 9, it is evident that the construction of the Yaounde-Brazzaville highway has contributed to agricultural productivity (19%). This is achieved through the transportation of agricultural produce from farms to markets and homes, which was initially a challenging task due to the enclave nature of the sub-division. Interviews with farmers who have farms along the highway highlighted the crucial role that the highway plays in transporting agricultural products, significantly enhancing livelihoods and food security in

the area, particularly given the fertile nature of the soils in the locality. The highway road is clean and smooth; enhancing its capacity to facilitate such activities (see Photo 5).



Plate 2: View of the road corridor from Sangmelima towards Djoum

Source: K. MELO 2024

The opening up of secondary roads (10%) resulting from the construction of the highway has also been a significant factor contributing to enhanced accessibility in the area. This development has greatly facilitated the expansion of settlements and the extension of urban areas. Additionally, these secondary roads have played a crucial role in facilitating the circulation of goods and services throughout the sub-division and have led to the establishment of essential social infrastructures such as hospitals, schools, markets, shops, and financial institutions, which were largely absent before the construction of the highway in 2012.

Moreover, the highway has facilitated the extension of local markets (22%) into international markets, significantly enhancing trade and commerce in the sub-division. This aspect will be further explored in Chapter 3 of this study.

Transport and transportation services (30%) have been the most notable benefits of the construction of the Cameroon-Congo highway. Commercial transport and transportation

have experienced a surge due to the construction of the highway, which has also spurred the opening up of secondary roads, as mentioned earlier.

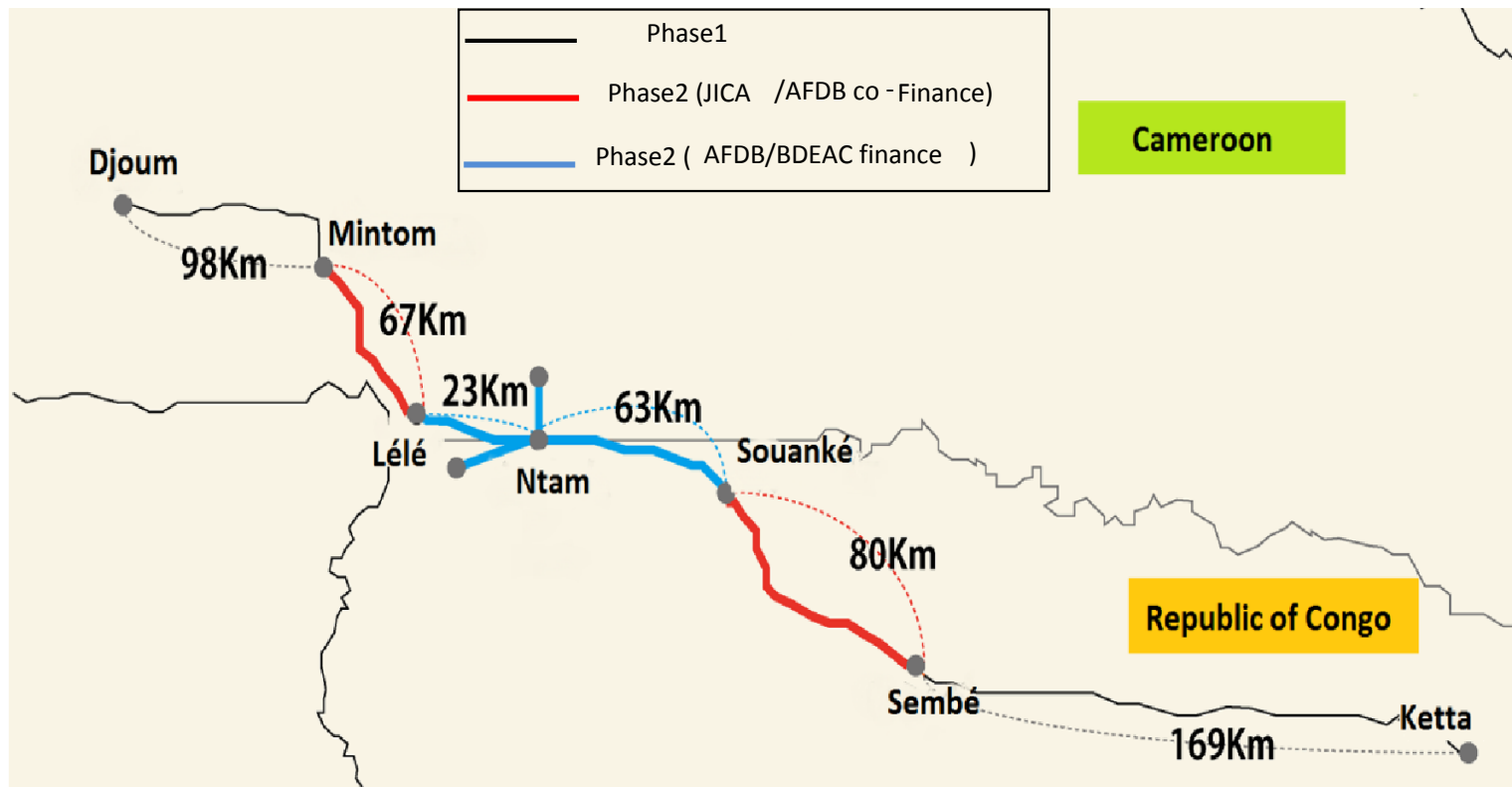


Figure 10: The road network from Djoum(Cameroon) to Ketta(Congo)

Source: conceived by the author from OSM

The construction of the highway project in 2011 has attracted vehicles and people from far and wide to the town of Sangmelima. Figure 10 illustrates that the main road, known as the TAHW, traverses the sub-division, particularly in Sangmelima town, and has also led to the opening of other secondary roads that did not exist before the construction of the highway in 2011. Most segments of the road network are concentrated around Sangmelima town, especially in the southern part, which is partly due to the ease of construction in these areas based on the terrain.

Additionally, a wide range of jobs (19%) have been created primarily as a result of the activities induced by the construction of the highway project. This prompted the study to further investigate the different types of jobs created in the sub-division due to the construction of the highway project (see Table 14).

Table 13: Respondents' view on jobs created in Sangmelima resulting from the highway project

Localities	Number of respondents	What are some jobs created here in Sangmelima town resulting from the construction of high way?		
		Transport jobs	Commerce	Education/Health
Akon1	29	16	10	3
Akon2	38	20	8	10
Admin centre	4	2	1	1
Lobossi	81	42	30	9
Mbeli'i	6	3	1	2
Otoakam	10	6	2	2
Total	168	89	52	27
%	88	53	31	16

Source; fieldwork 2023

Table 14 shows that the transport services in Sangmelima town have increased since the construction of the highway, which has created job opportunities for many people in area in the transport and transportation sector. This represented 53%. In the town, there exist transporters who travel within the town and those that transport across the town. So, it was important to point out the various jobs created by transportation in Sangmelima town. (See table 15)

Table 14: Transport services, number and average incomes

Transporters	Number	Average income/person (daily) in FCFA
Motorbike riders	1500	3500-5000
Taxi drivers	90	15000-20000
Truck drivers	80	40000-80000
Clandestine drivers	N/A	-

Source: Compiled from the Sangmelima council and interviews from the transporters, 2023

Table 15 illustrates that, within the transportation sector alone, approximately 1670 jobs have been generated in the Sangmelima Sub-division as a result of the construction of the highway. Specifically, commercial motorbikes account for over 1500 jobs, with daily earnings ranging between 3,500 and 5,000. The number of taxi drivers has surged in the town due to the highway construction, with around 90 registered drivers earning an average of 15,000 to 20,000 daily. Additionally, there are approximately 80 truck drivers operating on the highway, earning an average of 40,000 to 80,000 per day.

Prior to the construction of the highway, the region was secluded, and such employment opportunities were scarce in the town of Sangmelima. However, the road construction has unveiled these opportunities, leading to the creation of numerous jobs in the area. Photo 1 depicts a motorcycle park in the town of Sangmelima.



PHOTOS 2: motorcycle park in Sangmelima main market

Source. *K. MELO 2024*

The photo above shows a motorcycle park at the entrance of the Sangmelima market. This market is found at the centre town, showing that passengers can take bikes from here to wherever they are going to within the town.

The picture doesn't only show the number of motorcycle riders in Sangmelima town, but also the job that it has created to many Cameroonians in Sangmelima town.

As motorcycles cannot circulate in the market, there is another means of transportation through the use of trucks and wheelbarrows in the market. It can be seen on the picture that a small boy has escorted a passenger where he will hire a bike to his destination.

So, the availability of roads plays a crucial role even in creating “mini-jobs” to the younger ones.

Table 15 further elaborates on the burgeoning commerce in Sangmelima town, leading to job creation for many individuals engaged in various markets across the Sangmelima Sub-division. This represents 27% of the jobs generated in the region, partially attributed to the construction of the highway linking Sangmelima and Djoum, and extending beyond. Additionally, there has been a 10.5% increase in commercial agriculture within the Sub-division, enabling farmers to transport their produce from farms to markets with ease. This has significantly enhanced crop productivity, yields, and overall food security in the Sub-division.

Interviews with farmers and focus group discussions have confirmed that the construction of the highway has elevated agricultural productivity and generated agricultural-related employment opportunities. Educational and healthcare roles (14.5%) have also flourished in the Sangmelima Sub-division, as local hospitals and schools have been established following the arrival of the highway in the area. Despite these positive developments, the rapid urbanization in Sangmelima has presented challenges, particularly urban social issues that warrant examination in this study.

1.3 Social Implications Resulting from Highway Construction

In the social domain, schools, recreational centres/facilities and health centres/hospitals (for example Sangmelima Referral hospital, Centre de Sante Léproserie de Sangmelima, Hôpital de district de Sangmelima, Centre de Sante Intégré de Sangmelima, Centre de Sante Militaire de Sangmelima, Centre de Sante Intégré de Monazang and Dispensaire Mission Catholique d'Akon) and even churches are common in Sangmelima. Before the year 2000, Sangmelima counted 7 primary schools. In 2010, the number of primary schools increased to 12 and by 2020, Sangmelima counted 26 primary schools (for example, Government Bilingual Primary School Sangmelima, Ecole Privée la Rosée du Sud, Ecole publique d'application, Alfred and Sarah Bilingual academy, Ecole Catholique Bilingue Saint Rossaire, Grace Bilingual School, Royal English school, Ecole Catholique Saint Joseph and Ecole Catholique Sacré Cœur) 10 secondary schools (Table 20) and 5 higher vocational institutions (Table 21).



PHOTOS 3: The Inter-State(Cameroon-Congo) University

Source; **K.MELO 2024**

The inter-state university is a university that was established in Sangmelima after the launching of the Cameroon-Congo road project. The Senior Divisional Officer (SDO) of Sangmelima highlighted that the project was established on December 21st 2012 through a convention signed between the republic of Cameroon and the republic of Congo. It was a bilateral agreement between Cameroon and Congo that gave birth to the **UIECC**. In 2018, the first building of the campus in Sangmelima were received, in 2019, the University welcomed the first students for the academic year 2019-2020, focusing on digital technology programs. These programs are vital for economic prosperity in every nation. This shows that thanks to the opening of this school, many Cameroonians have been trained in various domains for future innovations. In 2024, the construction of digital innovations and business incubation centres began, funded by the Development Bank of the Central African States (BDEAC)

Rapid urban expansion is a crucial phase for developing countries due to economic growth and the expansion of road networks (Henderson, 2013). The global urbanization rate has risen from 39% to 52% over the past three decades and is projected to reach around 66% by 2050, with developing countries experiencing faster urbanization than developed nations (Cohen, 2006). Managing the growth of cities is imperative yet complex, as urbanization brings convenience but also risks such as land scarcity, overpopulation, traffic congestion, food security issues, pollution, and public health threats.

In-depth research into regulating urban expansion has become essential for sustainability. The road network, acting as the framework of urban spatial structure, plays a vital role in space expansion and influences urban development indicators. Although well-developed road networks enhance connectivity and regional exchange, they may lead to biodiversity loss, environmental concerns, and urban sprawl as they cut through natural habitats.

The Sangmelima highway construction, accelerating urbanization in the town, has prompted a series of urban challenges. Understanding urban expansion mechanisms is crucial for sustainable development, starting with an analysis of road network patterns. The study delves into the urban issues arising from highway construction in Sangmelima, emphasizing the need to address these challenges for balanced urban growth and community well-being.

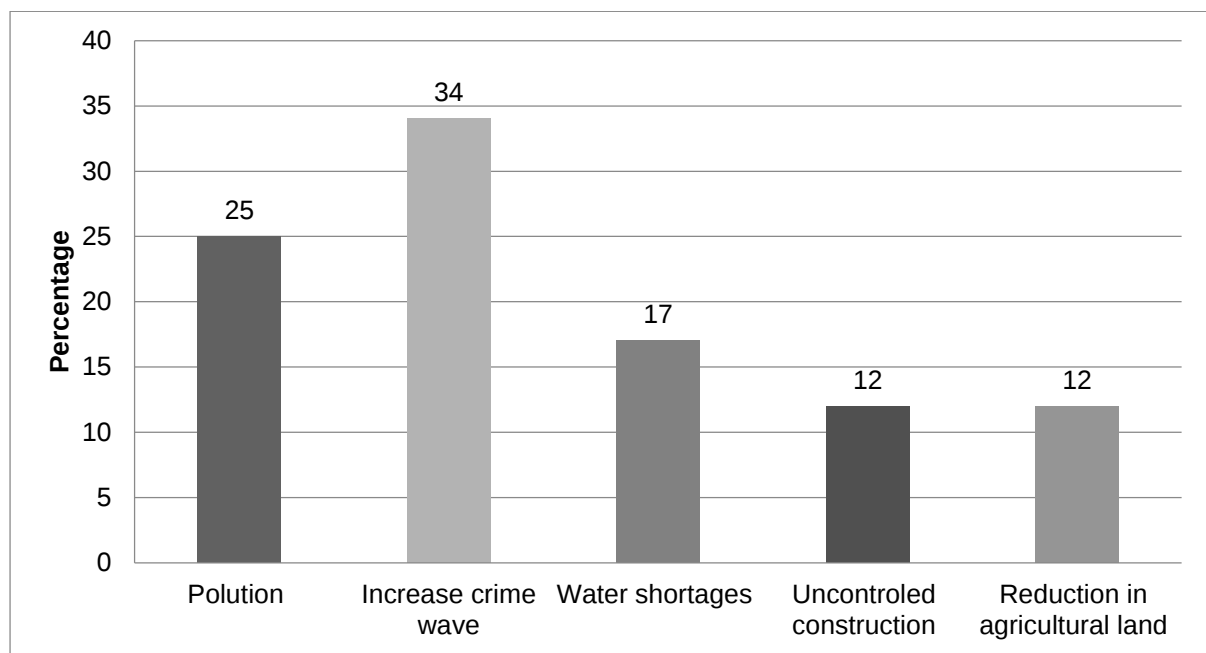


Figure 11: Urban challenges in Sangmelima town resulting from the highway construction

Source; developed by the author, 2023

According to Figure 11, pollution accounts for 25% of the urban issues perceived in Sangmelima Town. Rapid urbanization has led to an increase in the population of the town and the Sub-division, resulting in challenges in waste management. These challenges primarily stem from domestic waste management issues in homes. The Mayor and the Divisional Officer of the Sangmelima confirmed to the study that since the construction of

the highway, Sangmelima has experienced rapid urbanization, accompanied by typical urban challenges.

Most notably, there has been a surge in crime (34%) in Sangmelima Town, especially around motor parks, causing fear and uncertainty. Field investigations revealed that the high crime rates are linked to weak security measures. Key informants attributed the social crisis of the 14th of October 2019 and that of the 24th of May 2023 of Cameroon as the root cause, exacerbating crime in the area. A uniformed officer interviewed in Sangmelima confirmed the increase in crime, especially after the highway's construction in 2012, although measures have been implemented to address it.

Urbanization, as argued earlier, leads to a rapid increase in population density, creating security challenges. Studies have associated crime rates in Sangmelima with rapid urban growth, youth delinquency, poverty, and unemployment. Reports have linked the increase in crime rates to rising youth unemployment and the breakdown of traditional social values.

Water challenges are also significant in Sangmelima town, with many local taps in disrepair. However, this represents only 17% of the urban challenges, possibly due to alternative water sources such as boreholes and pressure pumps in some communities. Efforts are underway to improve water supply.

Rapid urbanization often leads to poor housing conditions, resulting in a 12% reduction in agricultural land and inadequate housing. This housing deficiency is exacerbated by a lack of investment and bureaucratic hurdles, leading to substandard living conditions, especially in urban areas.

The collapse of houses is another issue resulting from urbanization, exacerbated by challenges in construction and the high costs of labor and materials. This has led to an increased number of poorly constructed buildings and subsequent collapses, causing loss of life and economic waste.

The United Nations Human Settlement Programme's report highlighted serious urban sprawl and emergence of urban corridors in many African cities, exacerbating resource allocation challenges and perpetuating underdevelopment in rural areas. Rapid urbanization in Sangmelima has not been matched with adequate infrastructure development, resulting in a decline in the standard of living in Sangmelima.

Although urbanization brings economic benefits such as increased production and innovation, it also presents numerous challenges that must be addressed for sustainable urban development.

1.4 Conclusion

The construction of the Sangmelima-Djoum in 2012 greatly enhanced the socio-economic development of the Sangmelima subdivision, leading to a significant increase in urbanization rates. This urbanisation was accompanied by the expansion of healthcare services, the establishment of new educational institutions, improved trade facilities, and enhanced transportation services all of which collectively contributed to the area's development. However, the rapid urbanization also brought about various challenges, including an increase in crime rates, water shortages, and population issues, which must be addressed to ensure the sustainable development of Sangmelima subdivision and its surrounding areas. The study further delved into how the construction of the highway facilitated trans-border trade between Cameroon and Congo, as well as within the subdivision itself.

Chapter two of this study examines how the highway construction has fostered trade and commerce in Sangmelima town and the subdivision as a whole.

CHAPTER 2: THE ROLE OF THE CAMEROON-CONGO ROAD INFRASTRUCTURE IN THE PROMOTION AND ADVANCEMENT OF ECONOMIC ACTIVITIES IN SANGMELIMA TOWN.

2.0 Introduction

Sangmelima which is a town in the Dja and Lobo division and also the chief town in the Lobo division in the south region of the republic of Cameroon is at the roundabout of many roads, such as the Ebolowa, Mbalmayo, Mintom ,Aboulou and even Mvomeka`a all meet in sangmelima.

Sangmelima portrays a diversity of economic activities which have over the past years contributed to its development. Sangmelima's economic vocation was consolidated in 1953 with the construction of the Sangmelima-Ebolowa road which brought a boom in economic activities. The Dja and Lobo later became the largest cocoa producer in the country and this was thanks to the construction of the Sangmelima-Ebolowa road. This goes on the same way with the completion of the Sangmelima-Djoum road section whose effects are felt in Sangmelima town.

The town of Sangmelima is one of the four biggest towns in the south region of Cameroon and was created on the twenty first of August 1952(August 21 1952). Foulassi which is one of the villages in sangmelima is where the national anthem of Cameroon was born. Before the construction of the Cameroon-Congo highway, the road linking Sangmelima to Djoum was inaccessible, so it was difficult to migrate or transport people and goods to and from Sangmelima through this road. The construction of this transit has come as a remedy to the people of Sangmelima, those of Djoum, Mintom and even the people of the Congo.

This chapter is out to evaluate the extent to which the Sangmelima-Djoum road section has promoted trade, commerce and mobility in the town of Sangmelima and to the Sangmelima subdivision as a whole.

2.1. The highway and the development of trade and commerce

Transport is one of the main axes of development in a country. Road transport is the most used mode of transport in the world and roads play a vital role in our daily lives as they facilitate movement of people and goods from place to place. The modern developed society foundation is thanks to the mobility enabled by roads.

The Sangmelima-Bikoula section (85km), Bikoula-Djoum (38km) were all existing, even before the independence of Cameroon. The road axis was the main way to trade between Cameroonians and Congolese in the south region of Cameroon. This road remained untarred until recently. The tarring of the highway was not only aimed at linking the two countries but also promoting trade and commerce between Cameroon and Congo and even the rest of the central Africa, such as Gabon, Equatorial Guinea, Central African Republic (CAR) amongst others.

The trade and commerce between both countries have been strengthened and can be felt in Sangmelima town. The presence of many Congolese in sangmelima main market is a prove that trade has been improved between both countries as the road permits them to freely move to Cameroon. Also, the people coming from Djoum and Mintom have testified the increase in the demand thanks to the road corridor. See the table below.

Table 15: Respondents' perception on the promotion of trade and commerce thanks to the TAHW

Localities	Number of respondents	Do you believe that the trade and commerce sector in Sangmelima has improved due to the construction of the Yaounde-Brazzaville corridor?		
		Yes	No	Undecided
Akon1	29	18	9	2
Akon2	38	23	11	4
Admin Centre	4	3	1	0
Lobossi	81	60	14	7
Mbeli'i	6	2	2	2
Otoakam	10	9	1	0
Total	168	115	38	15
%	88	68	23	9

Source; field work 2023

According to table 16, the construction of the Yaounde-Brazzaville highway has greatly contributed to the development of trade and commerce in Sangmelima town and Sangmelima subdivision as a whole. According to respondents' view, about 68% validated the fact that the construction of the road has contributed to the development of trade in Sangmelima against 23% who were against and another 9% who were still undecided.

The main trade articles here include cocoa, coffee (cash crops) and food crops such as cassava, banana, cocoyam among others. The prices of these products have witnessed an increase since the road project was launched. This increase is due to the accessibility enabled by the road and eventually, an increase in the demand for these goods, failure to completely meet the demand has caused the farmers to increase their prices, especially recently as the price of fuel energy has increased.

2.1.1.1. DIMENSIONS OF TRADE ENHANCED BY THE MNHW

The construction of the multinational Cameroon-Congo highway has contributed to the development of trade and commerce in Sangmelima town. This was made in different ways, which the study terms it “dimensions”. It explains the reasons why the study had to investigate the dimensions in which the road corridor has contributed to trade and commerce in the town. Thanks to the survey, the ways by which the highway has contributed to the development of trade were highlighted on the table below.

Table 16: Respondents' perception on the different dimensions of trade and commerce in Sangmelima town

Localities	Number of respondents	Respondents' perception on the dimensions of trade development in Sangmelima town			
		Transportation of trade articles	Expansion of markets	Export and import of goods	Accessibility
Akon1	29	13	7	3	6
Akon2	38	18	10	3	7
Admin Centre	4	2	1	0	1
Lobossi	81	37	15	11	18
Mbeli'i	6	1	2	1	2
Otoakam	10	4	2	1	3
Total	168	75	37	18	37
%	88	45	22	11	22

Source; field work 2023

According to table 17 above, the construction of the Trans-African Highway has contributed to the development of trade and commerce in different ways. It illustrates that,

transportation services, especially in the sales of trade articles has contributed to the enhancement of trade (45%). This is because goods are now easily transported from one place to another thanks to the TAHW. From Yaounde to Sangmelima, from Djoum to Sangmelima and even from Congo to Sangmelima through the Sangmelima-Djoum section. On the daily bases, trucks are seen transporting goods and timber on the road highway. This has greatly influenced trade and transport in the subdivision.



Plate 3: images of goods transported on the road corridor (NR9)

Source: K. MELO 2024

The above photos show vehicles on the Yaounde-Brazzaville corridor, transporting goods from yaounde to Sangmelima and going right up to the Congo. Interviews conducted with some traders identified in the sangmelima market pointed out that there have been a lot of circulations of goods along the Sangmelima-Djoum highway and mostly timber,

trade articles and others who buy their goods from Yaounde and sell them in Sangmelima and even right up to Congo through the corridor.

The construction of the Cameroon-Congo highway has also granted lots of accessibility to Sangmelima town (22%). This is as a result of the completion of the Yaounde-Brazzaville corridor and also other secondary roads (e.g. the road to Nkolguet) in Sangmelima, linking the main highway road. This has permitted traders to have accessibility to bring goods to the markets and sell at very cheap transport cost. According to the interviews conducted with the Divisional Officer of Sangmelima, it was identified that traders easily come to Sangmelima town and sell their products thanks to the road construction which has given access to many neighbourhoods. It was further outlined that traders leave from far distant places to come and sell their products in Sangmelima town, this has promoted trade and commerce in the town, showing a positive socio-economic impact on Sangmelima town.

Furthermore, there has been an expansion in the local markets in the Sangmelima subdivision as a whole (22%). The reason for this is that those doing the trade and commerce in the subdivision can also buy from Congo and sell in Sangmelima and even further. Some respondents in the Sangmelima main market outlined that, before the construction of the road, there existed only two markets in Sangmelima, that is, the Sangmelima main market and the Akon (monazan) market. But today thanks to accessibility, there have been an increased demand, and therefore new markets such as the Sangmelima modern market which came as a result of the completion of the Sangmelima-Djoum section. Today, Sangmelima has three markets. Other minor businesses also emerged such as motorbike transport, mobile telephone kiosks, roadside shops, roadside restaurants, fish and palm wine sellers have a multiplier effect on the economic activities of Sangmelima.



Plate 4: Images of market and kiosk business (IGA)

Source: K. MELO 2024

The above pictures present a market at the left (A) and a quiosque business at the right (B).

Some respondents at Otuaka confirmed with the study that the municipal market (marche moderne de Sangmelima) came as a result of the Yaounde-Brazzaville road project. Also, the mayor and the Divisional Officer of Sangmelima confirmed that the road project did not only promote the bringing up of the project of the market project but also other projects such as the Inter-state school of Cameroon-Congo at Nkolnguet in Sangmelima and also the reference hospital at Etounelinga. These are just few projects amongst many. The construction of these projects has not been without effects, it can be seen that the municipal market was built in the forest thereby leading to the destruction of animal habits and loss of some species of animals.

Also, Congolese come to buy certain goods in the town of Sangmelima back to their country through the highway. Markets are therefore expanded, trade transactions going beyond Sangmelima town to other places or towns. This has influenced the exportation of goods between the two countries (11%). This has boasted not only in the Dja and Lobo division but the whole of the south region of Cameroon. Some traders interviewed in the Sangmelima market confirmed that since the road was tarred, they have been able to buy

goods from the Republic of the Congo which has increased their market products. It was on this basis that it was important to check on how the construction of the MNHW has influenced the trade and commerce in Sangmelima town.

2.1.2. The setting of several economic activities in Sangmelima town

Economic activities refer to all the activities involved in the production and distribution of goods and services in an economy. Economic activities vary from primary to secondary, tertiary and quaternary. To demonstrate the economic advancement of Sangmelima thanks to the Multinational Highway (MNHW) road, many economic establishments in Cameroon now consider Sangmelima as a potential market centre. For instance, the mbotio bakery, which is now the main supplier of bread in Sangmelima town. According to the consumers and even some traders who sell bread and other flour-made products confirm the fact that the tarring of the Sangmeima-Djoum section has influenced the creation of the bakery in the Sangmelima municipal market. To add to this, many other activities such as small bars, hotels and small kiosque businesses along the road network towards Djoum. Such bars have increased thanks to the increased demand linked to the road. Hotels along the road have also witnessed an increase in the number of clients received. Small kiosque businesses along the corridor have witnessed an increase in their sales and many others have opened their own businesses along the road.

Table 17: Some activities that emerged along the Sangmelima-Djoum road network

Number of activities before and after the road construction	Activities	Average Daily revenue or number of clients before the corridor construction	Average Daily revenue or number of clients after the road construction
3 to 6	Bar	20000	40000
2 to 5	Hotel/hostel	10	16
3 to 7	Kiosque	40000	75000

Source; Field work 2024

The above table shows some activities that emerged along the Sangmelima-Djoum road section. Before the construction of the road corridor, only about three bars existed at the Sangmelima-Djoum road section, and it later on increased to six, with average daily revenue of 20,000 FCFA. The 20,000 FCFA later increased to 40,000 FCFA.

The number of hotels has also increased from two to five, with a record of ten customers at average before the road construction and sixteen after the construction of the MNHW road.

Also, the number of kiosk businesses has witnessed an increase from three to seven along the highway from Sangmelima to Djoum. The average daily revenue was forty thousand (40,000) before the construction of the road network, but the amount has been increasing with time following the road construction to seventy-five thousand (75000). This revenue has been increasing this fast and also thanks to the mobile money transaction (MTN MOMO)



PHOTOS 4: Small scale business shop at Akon roundabout

Source: K. MELO 2024

The above image shows a small shop at the Akon round about. It can be seen that thanks to the road construction, many activities have accumulated on the same place. A travelling agency (BUCA VOYAGE), and also a bar (Bernabeu) and in front of them is found a small shop (quiosque), selling a diversity of food and drinks.



PHOTOS 5: Mbotio bakery in Sangmelima

Source: K. MELO 2024

The presence of this bakery has not only facilitated the acquisition of bread at all-time but also created employment for so many people such as those buying and selling back from door to door. Another example is the people selling in small stores (quiosk) along the road side.

Another is Congelcam, which is the main dealer of frozen fish in the country, actually opened many branches in Sangmelima town, such as the Conlgecam at Bakassi, and that of the municipal market of Sangmelima. Another has been opened in the Sangmelima modern market which is not yet fully operational. All of these thanks to the construction of the TAHW.



PHOTOS 6: Image of congelcam at Bakassi market

Source: K. MELO 2024

The above photo shows the recently built Congelcam at Bakassi_Sangmelima. Congelcam is deals with the importation, distribution and retailing of seafood. It may be fish, chicken or even pork. The use extensive cold chain logistics like ware houses and refrigerated trucksto provide affordable proteins nationwide. Respondents declared that this is the second biggest Congelcam in Sangmelima main market. This Congelcam has help to provide employment directly and indirectly. It has created employment for many that work at the warehouses, those working as sales agents, and even those that are involved in offloading the trucks. It provides employment indirectly for those selling fish in detail at the roadside and also those selling roasted fish. This has reduced the unemployment rate in Sangmelima town.



PHOTOS 7: Image of Congelcam at the Sangmelima main market

Source: K. MELO 2024

The photo above shows the first Congelcam in the Sangmelima main market. The presence of these two Congelcam have not only eased the acquisition of fish at a constant supply, but has promoted other related fish businesses such as the roasting of fish around snack bars and even night clubs. The fishes are also roasted at the roadsides as truck drivers

coming from Djoum and even from Congo can stop and eat before they can continue their journey. This is a phenomenon that never existed before.



Plate 5: Small scale fish businesses

Source: K. MELO 2024

The above pictures show a phenomenon of fish retail in Sangmelima market and some in the quarters. This phenomenon that never existed before in Sangmelima town has now become one of the main businesses in the town. It helps to distribute fresh fish in the town as people are not forced to go and stand in long line to wait before they can buy their fish. Thanks to the road construction, people can transport their fish without the risk of it getting bad on the way. Not only fresh fish is sold in Sangmelima town, now some people have developed a new way of consuming the fish. Nowadays, fish is being roasted along the road thereby limiting the shortage of food.

Congelcam has led to a phenomenon of fish retailing, supplying to the neighbouring villages constantly. The villages such as Oveng, Akak-esse, Njantom, amongst others. These villages formally depended on fishes from rivers which was seasonal.



PHOTOS 8: Fish roasting at the Sangmelima market, beside Bucavoyages

Source: MELO 2024

The fish business is not limited to the supply to households. It has also helped to employ so many Cameroonians in other businesses like that of fish roasting. Most people stop by when tired and in the course, they may be hungry and thus consume the good quality freshly roasted fish. This is possible because the place is also found along the road corridor.

Furthermore, many other businesses have been created in Sangmelima thanks to the road construction. Here we are talking about Brasseries du Cameroon and Guinness Cameroon SA, which are both beer suppliers in Cameroon. Cement such as CIMENCAM and Dangote cement SA which recently came up, ware-houses, especially basic necessities such as sugar, salt, maggi cubes, milk amongst others and also hardware stores for building materials. The good road makes it in such a way that there is constant supply from Yaounde to Sangmelima and from Sangmeima to Djoum and even beyond. The town of Sangmelima

and neighbouring villages get constant supply, thereby, boosting the economic transaction of the whole subdivision. All these have greatly contributed to the economic development of the subdivision.

To add, hotels have emerged in Sangmelima as a result of the construction of the Cameroon-Congo road infrastructure. Examples include the Afamba hotels, Onos hotel and many others. The first one was the Afamba hotel, which after the construction of the road network has been renewed. These hotels provide lodging for strangers and even permanent residents with a variety of services, providing different meals, entertainment and some personal services. These hotels welcome mostly strangers traveling on the road highway. Onos hotel is one of the best hotels in Sangmelima which emerged after the construction of the road corridor. Individual respondents at Akon¹ confirmed with the research that prostitutes are available, and are out to satisfy the road users who stop at the Akon roundabout to rest. Even though prostitution is forbidden in Cameroon it is thanks to the field assistants who could convince the people to confirm with the research on the topic. Though prostitution is forbidden in Cameroon, it still remains the means by which some people take to survive in Sangmelima.

Other economic activities like travelling agencies have emerged thanks to the completion of the road corridor. At first, only old cars could travel through the Sangmelima-Djoum road section, but the study thanks to the presence of the researcher on the field has seen that this road has become a major road which is plied by so many cars both public and private. A good example of such agencies includes Bucavoyages that transports both people and goods to Djoum and other regions through the road corridor.

Informal activities such as motorbike transport, mobile telephone quiosk, roadside restaurants, roadside shops and even fish and palm wine sellers. All these have a multiplier effect on the economic activities of Sangmelima town. Despite the influx of the informal sector activities, the formal sector has made significant progress especially with the establishment of branches of formal banking institution such as Credit communautaire d'Afrique (CCA), Société Commercial de Banque Camerounaise (SCB), and Banque Internationale du Cameroun pour l'Épargne et de Crédit (BICEC). These financial institutions have played a crucial role in revitalising and diversifying the socioeconomic functions and activities of the town.



PHOTOS 9:Image of CCA in Sangmelima

Source: K. MELO 2024

The Credit Communautaire d’Afrique is a bank in Sangmelima, located just along the NR9 not far from the main market. They help business man to easily access the bank for their different transactions. Respondents confirmed with the study that the presence of this bank follows the construction of the road corridor.



PHOTOS 10: Afriland First Bank Sangmelima

Source: K. MELO 2024

The Afriland First Bank is also known bank in Cameroon for its good deeds. Its presence in Sangmelima is also a blessing, ranging from infrastruttura development to even economic benefits as it benefits the population and ease transactions and payments.



PHOTOS 11: SCB bank

Source: K. MELO 2024

All of the above banks are located in the centre town of Sangmelima. The presence of these banks have facilitated savings and also the transfer of money between different regions in Cameroon and even above, that is, going from national to international. Some of these banks have granted loans to many people in the town, thereby, encouraging investment by the people in the town. It has helped many people to start up new businesses and therefore, encouraging growth.



PHOTOS 12: l'Envol. Place de l'an 2000

Source: K. MELO 2024

The above picture shows a roundabout (l'envol) in Sangmelima town. According to respondents, this roundabout is at the center of so many activities that have been stated before. From the picture we can identify the “Mbotio bakery, SGC bank, at the left hand is found another bakery called boulangerie Marie-angel. This monument is the oldest in Sangmelima town, followed by the Essam Francois monument which all are located along the road network in Sangmelima town.



PHOTOS 13: Motorcycle park in Sangmelima town

Source: MELO 2024

Motorcycle riders play a vital role in Sangmelima town as they facilitate transportation of people and goods. Motorbikes can easily transport people to both accessible and inaccessible places. They also play an important role in the economy of Sangmelima as the municipal council receives taxes from motorcycle riders.

2.2. MOBILITY OF THE POPULATION

Mobility is the ability for one to move freely. So mobility in this study can be internal or external. Internal mobility in the Dja and Lobo division involved the displacement of people on a corresponding short distance such as from one subdivision to another, from one village to another and from one compound to another within the same village. It involves very few problems of language, social customs, ideology and institutions. Though the problems of internal migration involve low income, bad roads, amongst other, the construction of the Yaounde-Brazzaville corridor has mitigated these problems and has boosted the mobility in the subdivision. This is

because transport fares, especially along the Sangmelima-Djoum road section, considerably dropped and within no seasonal variation as it used to be.

Before the construction of the TAHW road, movement of people and goods were too limited along the Sangmelima-Djoum section and it was seasonal. During the rainy season, trade among villages between Sangmelima and Djoum was very limited due to the presence of mud. Also, before the road section was tarred, dust during the dry season and mud during the rainy season made transportation of people and goods very difficult.

The construction of the highway has opened this area to various socioeconomic opportunities as many transportation agencies have opened up in Sangmelima town. These agencies include; Buca voyages, Galaxie voyages, Noupa voyages amongst others, which has permitted urban-urban transportation and inter-urban transportation.

The number of passengers has tripled with the tarring of the Multinational highway (MNHW). Now people can travel in and out of Sangmelima subdivision at cheaper price and with lower risk of accident. Before the construction of the Sangmelima-Djoum section, a Bucavoyage was the only travelling agency in Sangmelima. It was followed by Jet voyages which later-on closed its doors as it was sold and today has become Noupa voyages. All the other agencies found today in Sangmelima emerged thanks to the construction of the Sangmelima-Djoum section of the MNHW. The emergence of these agencies comes as a result of an increased in population, which also meant that the demand for mobility through transport has increased. The travelling agencies in the past transported people only in small buses of about 30 places (coaster), but today they operate with 80 sitters because of the higher demand.

Table 18: Cost of transportation before and after the construction of the highway

Means of transport	Price before road construction	Price after road construction
Car (bus)	3000	1500
Motorcycle	4500	-----

Source; fieldwork 2024

Table 19 shows that before the road construction, cars transporting people and goods to and from Sangmelima and Djoum cost 3000 FCFA and presently cost 1500 thanks to the road construction. When people found it difficult to load a car before travelling from Sangmelima to Djoum, they preferred to hire a motorcycle which was faster to travelling

with the bad condition of the road at the time. The field survey revealed that a motorcycle cost 4500 FCFA to travel along.

The construction of the road has brought a great change in the town of Sangmelima, but not withstanding, some people (motorcycle riders) who were working along this road have lost their privileges. Respondents confirmed that very few motorcycles plough the corridor nowadays, since it is much cheaper, faster and more comfortable to travel in a bus.

Increased mobility of people in the subdivision is for various reasons. The reasons may vary from social to economic and even political.

Socially, people move in and out of Sangmelima because of religious purposes. From leave from various villages to come and attend church services in Sangmelima. Some respondents confirmed with the study that many people travel from far distances to attend church services in Sangmelima town. For instance, some people travel from Foulassi to attend church service at the Roman Catholic Church at the Notre-dame cathedral and the new built Saint-Joseph cathedral at Monavebe which gathers majority of Catholics in the subdivision.



PHOTOS 14: Notre dame Cathedral in Sangmelima

Source: K. MELO

The above picture shows the newly built Cathedral at monavebe which regroups a good number of Christians. It plays an important role in the spiritual lives of Sangmelima's

residents. The construction of this cathedral has been a symbol of community and faith with locals rallying together to support its development. According to some respondents, this cathedral has a seating capacity of about 3500. Other respondents confirmed that so many people leave from different quarters and some even travel from Djoum to come and attend seminars and church mass in Sangmelima. This shows that the road network has really impacted mobility in Sangmelima town.

Another social reason for the movement of people in the subdivision is the need for health services which is available in Sangmelima town through the availability of many hospitals and clinics available in the town. Health centres include; centre de l'éproserie de Sangmelima, Sangmelima district hospital, centre santé integre de Sangmelima, Centre de santé militaire de Sangmelima, centre de santé integre de Monazang and dispensaire mission catholique d'Akon are common in Sangmelima. All of these thanks to the accessibility promoted by the road.

Furthermore, people tend to move to Sangmelima for education. Before the year 2000, Sangmelima counted just about seven (7) primary schools. In 2010, the number increased to twelve (12), and by 2020, Sangmelima counted 26 primary schools. Some examples of these primary schools are; the government bilingual primary school sangmelima (GBPS), ecole prive la rosee du sud, ecole publique d'application, Alfred and sarah bilingual academy (ASBA) amongst others. Secondary schools are both private and public. Some public secondary schools include; Government Bilingual High School Sangmelima (GBHS), Lycee Classique et Moderne de Sangmelima, Lycee Technique de Sangmelima (LTS), CETIC de Sangmelima, CETIF de Sangmelima and CODJAL de Sangmelima. The private schools include; Alfred and Sarah Bilingual Academy (ASBA), College Notre Dame du Sacre Coeur, and college Immatricule de conception. The town of sangmelima is not only limited to primary and secondary schools; also, there are also higher education and training centres that emerged thanks to the mobility enhanced by the road. They include; the Sangmelima vocational Training Centre, Ecole des Technicien d'agriculture, Ecole d'Infirmier Diplome d'etat (IDE), ENIEG de Sangmelima and Inter-Etat university Cameroon-Congo. See table 20 below.

Table 19: The distribution of some secondary schools in Sangmelima

Number	Name of school	Location	Status
1	Lycee bilingue de Sangmelima	Sangmelima village	Public
2	Lycee classique et modern de Sangmelima	Ebolenbwang	Public
3	Lycee technique de Sangmelima	Otoakam	Public
4	CETIC de Sangmelima	Otoakam	Public
5	ASBA	Sangmelima village	Private
6	College notre dame	Sangmelima village	Private
7	College Immaculee conception	Nkolguet	Private
8	CODJAL	Lobossi	Private

Source; field work 2023

The table shows a good number of schools, the general, technical and professional are found in urban and semi urban areas of the town. Such a mixed system offers diversified fields of study for students who want to continue their studies. It plays a crucial role in shaping students' personal, social and intellectual development. It equips the students with knowledge, skills and competences needed for success in higher education, this, giving them a strong academic foundation. These facilities permit students in Sangmelima and out of Sangmelima to be ready for the world of employment.

Table 20: Some higher education and vocational institutions in Sangmelima

Number	Name of institution	Location	Status
1	Sangmelima Vocational Training Centre	Nkolguet	Public
2	Ecole des Technicien d'Agriculture	Nkolguet	Public
3	Ecole des Infirmiers d'Etat	Nkolguet	Public
4	Universite Inter-Etat	Nkolguet	Public
5	ENIEG de Sangmelima	Mbeli'i	Public

Source; field work 2023

The above institutions which are all government owned provide equipment for the students for students with specific skills and knowledge for the entry into a specific professional domain. These institutions prepare students for immediate employment by preparing them with practical skills to facilitate a good transition in their chosen domain.

Secondly, the mobility in the town of Sangmelima can be seen in the economic domain. The launching of building and construction projects like the construction of the Sangmelima Referral hospital, the Inter-State university and the Sangmeima modern market have attracted workers, scholars, researchers and business people into the town of Sangmelima. Business and employment purposes were therefore the reason for the influx of people in Sangmelima town. As mentioned earlier, before the year 2019, only two markets existed in Sangmelima, but today we have three main markets and also small markets that have been opened around town in order to meet the increasing demands. Many banks have opened in Sangmelima that have also attracted workers in Sangmelima seeking for employment. Such banks include; CCA, BICEC and SCB. It goes in same way with the creation of hotels.

Another economic reason is that of the secondary sector which includes small scale industries involved in processing agricultural raw materials, arts and craft and also processing facilities for wood extracted from neighbouring forests.

Politically, mobility has also been influenced. Sangmelima is a medium-size city which developed on an administrative unit whose primary function was to bring together the important services of the administration closer to the citizens. The collection of divisional and sub divisional delegations of different departments have acted as pull factors, attracting people into the town. This is statistically proven as the town alone inhabits 52.57% of the overall population of the Dja and Lobo division (Census Designated Place (CDP), 2015). The transfer of civil servants to Sangmelima, causes them to go along with their families and also the search for work act as pull factor for the domain.

2.3. CONCLUSION

As earlier noted, where a road passes, a development follows. The construction of the MNHW that passes via Sangmelima is not an exception. The road has brought about socioeconomic development, especially in the development of internal and external trade in

Sangmelima subdivision. The trade in a long way has enhanced the social and economic lives of the people of Sangmelima town. The perception is largely via trade and market expansion, the sales of variety of products and services which has increased the living standard of the people of the town unfortunately, the external trade has not been without negative effects. It has led to the circulation of illicit products such as ivory, bush meat, and illegal movement of people into the territory. This has led to the commercialisation of illegal products in Sangmelima town. Notwithstanding, the construction of the Yaounde-Brazzaville corridor has promoted mobility in the town and which has seen the birth of several agencies travelling to other regions. It is for this reason that the study went further to investigate the challenges confronting the TAHW road users in Sangmelima town. This therefore gave birth to a new chapter. That is the chapter three of this study.

CHAPTER 3: THE CHALLENGES CONFRONTED BY THE CAMEROON-CONGO ROAD USERS

3.0 INTRODUCTION

The road project aimed to make the Cameroon-Congo road better, which is part of the integration plan of the Economic Commission of Central African States which aimed at connecting the capitals of the eleven member countries. According to the ADB, the road project was a major one because it connects the CAR to Cameroon, southern region of Gabon and the Brazzaville pointe-noir road to Cameroon. The road project also includes related works concerning the development of rural roads, fixing socioeconomic infrastructure and creating jobs for the youth. The goal is to lower transportation cost in the region. The people in the south region of Cameroon will benefit directly from the blessings of the road while those in Congo will benefit indirectly. The beneficiary population contribute in the construction, management and maintenance of some related infrastructures (ADB 2012). A road is known to be the driver or spear header of development in a region as it is commonly said, where a road passes, development follows. Development cannot go without challenges. Despite the benefits derived from the road and efforts to establish sustainable management, it still remains a problem to the people of the region. However, there are challenges like administrative, communication and socioeconomic difficulties that make it difficult for the people and stakeholders to help develop the town of Sangmelima. They try to overcome these problems by adopting a series of strategies which will be part of this chapter.

3.1 The dimensions of problems faced by the Cameroon-Congo road users in Sangmelima

As earlier stated, the MNHW road users in Sangmelima are faced with a wide range of setbacks. These problems range from socioeconomic, communication to administrative, which goes a long way to reduce the ability of the road corridor to contribute to the socioeconomic development of the town. These road users include; drivers at transnational level, and those at the local level.

Table 21: The various dimensions of problems faced by the MNHW road users in Sangmelima

Localities	Number of respondents	What are some of the setbacks faced by the Yaounde-Brazzaville road users in Sangmelima			
		communication	Administrative	Economic	Social
Akon1	29	9	11	5	4
Akon2	38	11	17	4	6
Admin Centre	4	1	2	0	1
Lobossi	81	25	28	14	14
Mbeli'i	6	1	2	1	2
Otoakam	10	3	1	2	4
Total	168	50	61	26	31
%	88	29.5	36	15.5	18.5

Source; field work 2023

The table above shows the different groups of setbacks confronted by the Yaounde-Brazzaville road users in Sangmelima subdivision and especially in Sangmelima town.

The table brings out the different problems confronted by the Yaounde-Brazzaville road users in Sangmelima subdivision and especially in Sangmelima town. From the table, it is seen that 29.5% of the TAHW road users are facing communication challenges which is explained by the poor nature of the sections of the road in the subdivision. Amongst these challenges, communication is the second highest problem faced by the road corridor in Sangmelima town. Administrative problems represent the highest challenge with a response score of 36%, while the social and economic problems represent 18.5% and 15.5% respectively. The challenges are further analyzed individually so as to understand how they manifest and how the Cameroon-Congo highway road users confront them.

3.2. Communication problems faced by the Cameroon-Congo road users in Sangmelima town

It is obvious that the construction of the road highway linking Yaounde to Sangmelima, Sangmelima to Djoum and Djoum to Congo also involves the construction of secondary roads which were later exploited by the local council and expanded them to give accessibility to enclave areas. It was seen that most of the roads in Sangmelima were bad, especially those linking to the highway. This has limited in a long way the efficiency and effective circulation in the town. The TAHW road users explained that the reason for frequent accidents in the subdivision is linked to the poor nature of the road. Some key informants during the field investigation made us to understand that most of the roads were seasonal, except those that are tarred, linking Sangmelima to Djoum. The proportion of the respondents who never noticed any problems with the nature of the roads in the subdivision are of the view that motorbikes don not necessitate motorways. However, the study found out from key informants that motorbike riders who do not see any difficulty on the nature of the roads are mostly the ones that circulate just around Sangmelima town and also those circulating along the Sangmelima-Djoum road since the roads are now accessible.

According to the field observation, it was seen that most roads are very poor during the rainy season and equally very dusty during the dry season. The dry and dusty season is attributed to the high temperatures of about 20-25⁰ Celsius (C) yearly (world bank 2012) and the climate here is called the humid equatorial climate. During the rainy season, due to high annual rainfall of about 1500-2000 millimetres (mm) per year makes the situation worst due to the numerous potholes on roads created by overland flow caused by heavy rains in the subdivision. The poor nature of the roads has limited most of the users in accessing the certain areas in the subdivision. In addition, the highway itself was noticed to also contain potholes in some sections which continue to expand, especial during the rainy season.

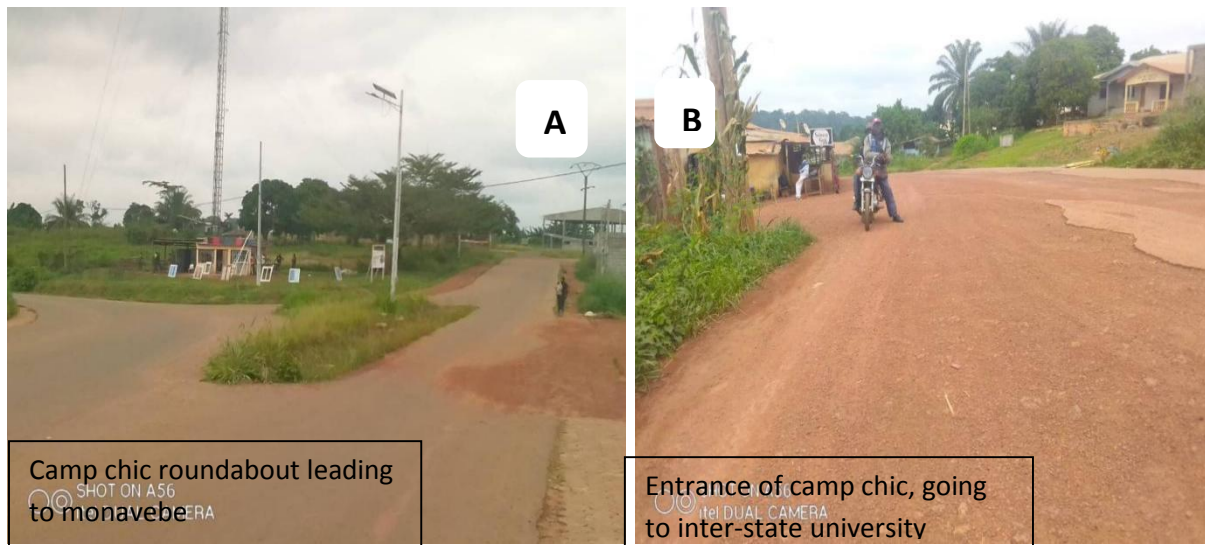


Plate 6: Photos of degraded roads in Sangmelima town

Source: MELO 2024

The above picture shows how tarred roads have degraded in some section of the highway, while the others show how some roads are incomplete and dusty. This is one of the reasons why the road is said to be seasonal.

Interviews that were conducted with those constantly using the road corridor in Sangmelima confirmed that some parts of the road are gradually degrading and need maintenance and rehabilitation. It was equally important to gather information from respondents regarding the state of the highway in Sangmelima town.

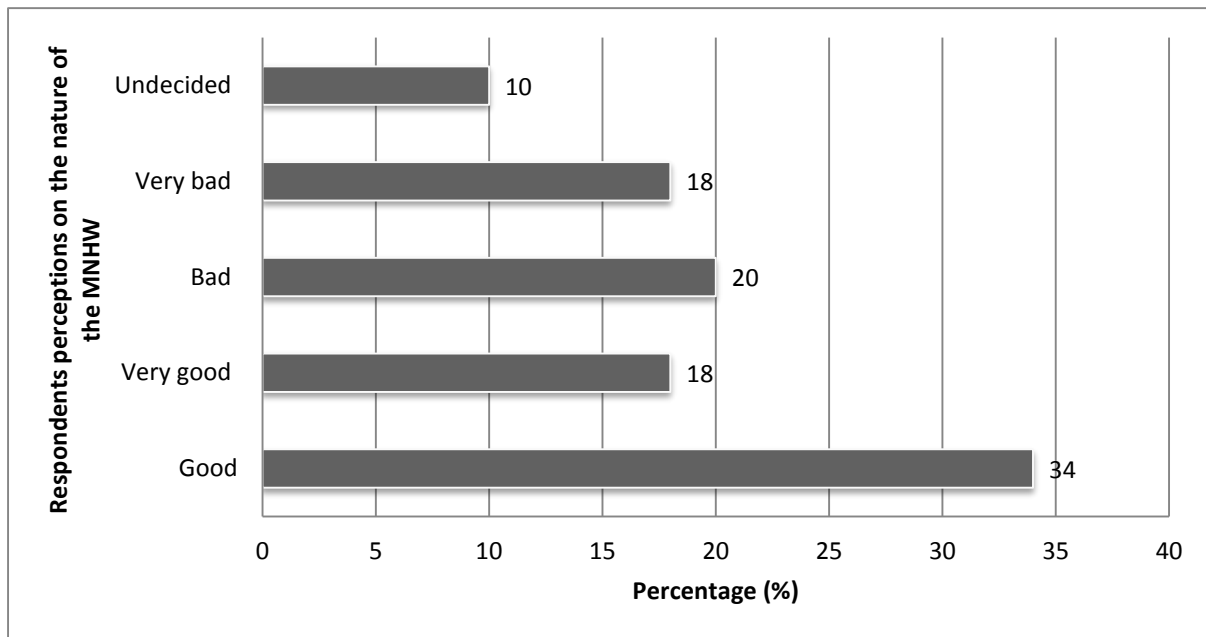


Figure 12: Respondents' perception on the state of the MNHW

Source: Developed by the author 2023

The above figure reveals that the respondents were of the view that the nature of the MNHW was good (34%), which represents the highest response score. This is because the road is still a new one without much degradation. The choice of the MNHW being very good represented just 18% which states the road is facing a series of problems at the level of maintenance and rehabilitation. The rate of response that the road is bad was rated up at 20%, while 18% perceived the road as very bad. 10% of the respondents were indecisive on whether the state of the road network was good or bad. Examining the state of the road, it can be confirmed that the state of the highway has problems which includes communication and vehicles on the road which need special attention.



PHOTOS 15: State of the highway from Sangmelima to Djoum



PHOTOS 16: state of Sangmelima-Ouessou corridor

The very advanced state of the road network destroying, coupled with the heavy traffic, have hindered and resurfacing works from producing an acceptable level of continuous services of the road. Going beyond the maintenance of this road, development and rehabilitation are not only urgent options but stand as the only possible alternatives. In addition, since the road is an extension of the Yaounde-Brazzaville corridor between Cameroon and Congo, its development will help to generate higher returns in the investments made on this corridor which has been constructed with bank financing.

The maintenance of roads in Cameroon is managed by the Ministry of Transport (MINT), through the development of roads and maintenance. It provides Road Maintenance (RM) operations from a data bank which provides the inputs for road maintenance planning. It also prepares building documents and related contracts and also submits contracts for approval.

In 1983, the United Nation's World Commission on Environment and Development (UNWCED) was established to develop a global change program with the objective of raising awareness and concern about negative impacts of socioeconomic development (Drexhage and Murphy, 2010). The Brundtland report, where the concept of sustainable development was introduced in 1987. In the report, it is clearly stated and analyses give a clear overview of the conditions of the world today. In the same way, infrastructural development including the road linking Cameroon and Congo has been facing numerous difficulties. Okonkwo, 2013 highlighted that the world conference that took place in Stockholm in 1972 attracted world attention to talk about the links between development and its impacts.

Up to 2011, Cameroon's Road Fund (RF) benefited from funds collected directly from petroleum products. However, following an amendment to the 2011 finance law, the government decided to implement a transitional measure. This measure involves the deposit of money required for the fund into an account created in the fund's name in the BEAC (Banque des Etats de l'Afrique Central). The money will now be transferred as calls for funds are made. Despite these changes, the operations of the road fund have not been fundamentally disturbed. It continues to receive its resources required for its mission. The weak absorptive capacity observed stems from delays in contracts awards, weak organizational and material capacity of SME (Small Medium Enterprises), identified as prime contractors and the operation's programming system in which the RF is not involved since as it only acts as payment instrument.

3.3. Administrative challenges confronted by the Sangmelima-Djoum road section in Sangmelima town

On highways, road users often encounter administrative challenges related to toll collection, heavy and oversized vehicles, unclear signage (road signs and symbols) and inconsistent enforcement of traffic laws. All of these can pose a serious problem for highway road users.

Toll collection problem in highways in the Cameroon-Congo highway include issues like corruption, inadequate infrastructure for efficient toll collection, lack of transparency in revenue management and challenges with enforcement against toll evasion. These problems actually hinder the effective management of toll revenue and impact the maintenance and development of the road infrastructure. This problem is mostly caused by uniform officers who accept bribes from drivers.

Implementing a transparent, accountable toll collection system and addressing issues of corruption and inefficiency are crucial steps to improving toll collection process in the Cameroon-Congo highway.

Another is the unclear signage and inconsistent enforcement of traffic laws can indeed pose significant problem for highway road users. Signage refers to the road graphic signs, symbols and images that are used to give directions.

Cameroon has a good system to keep its roads strong. They check how heavy trucks move, to make sure that they are not too heavy. This helps truck drivers know the rules and reduce the number of times that they stop them. The government is also building more stations to check truck weights. They planned to have 23 stations by 2025 while they are presently on 18 stations. These efforts make sure that the road should remain in good conditions and get fixed when needed. The money from the RF pays for almost all the road maintenance (80%), including 100% regular fixes.

In this context, it is important to highlight that the Ministry of Public Works and Transport (MINTP) plans to incorporate the maintenance of the Yaounde-Brazzaville corridor into the priority network maintenance schedule, following the expiration of the works performance security period. Conversations with the Cameroonian authorities and other technical and financial partners have indicated this attention.

The organizational structure of the road fund remained unaffected by the decision to suspend direct collection of charges and

The fund possesses the necessary resources to meet its routine obligations. In addition, several actions are undertaken to strengthen these efforts, including

- a) Updating the road master plan to enhance work scheduling,
- b) On-going training programs for the SME in contract management funded by the European Union (EU) and the World Bank (WB).
- c) Reforming internal procedures of the Road Fund and its relationship with contracting authorities and,
- d) Enhancing the Road Funds capacity in planning and resources management

Furthermore, concerning the establishment of structures within the new ministry of Public ownership, processes will be implemented to oversee contracts executed by SME ensuring transparency, fairness and competitiveness. Discussions on the structure of the road fund and the issues related to absorptive capacity will be addressed through sector dialogues involving the government and other partners. These discussions will focus on three main areas;

- a) Enhancing capacity in planning maintenance operations.
- b) Improving the quality of collection methods (possibly returning to direct collection) and managing resources collected for road maintenance.
- c) Strengthening the capacity of SME awarded road maintenance contracts.

In the medium term, the reflection process aims to improve institutional and operational arrangements to ensure the sustainability of road investments in Cameroon. Risks that may hinder the achievement of these goals include;

- a) Not fulfilling commitments related to axle-load inspection and vehicle weight
- b) Inadequate resources mobilization and utilization for road maintenance, and
- c) The fragility and lack of adherence to organizational structures for youth involvement.

During field survey, it was observed that law enforcement officers responsible for regulating toll gates often engage in corrupt practices by accepting small bribes from transporters and allowing them to proceed. This contributes to the circulation of illicit products in the area. This situation portrays a scenario where law enforcement officers take advantage of their position to enrich themselves under the guise of regulating transporters activities along the Yaounde-Brazzaville corridor. The acceptance of these small bribes by law enforcement officers is partly attributed to transporters failure to adhere to operating conditions, such as avoiding overloading and over speeding.

In addition, field inquiries revealed that many road users also engage in speeding and reckless driving behaviour.

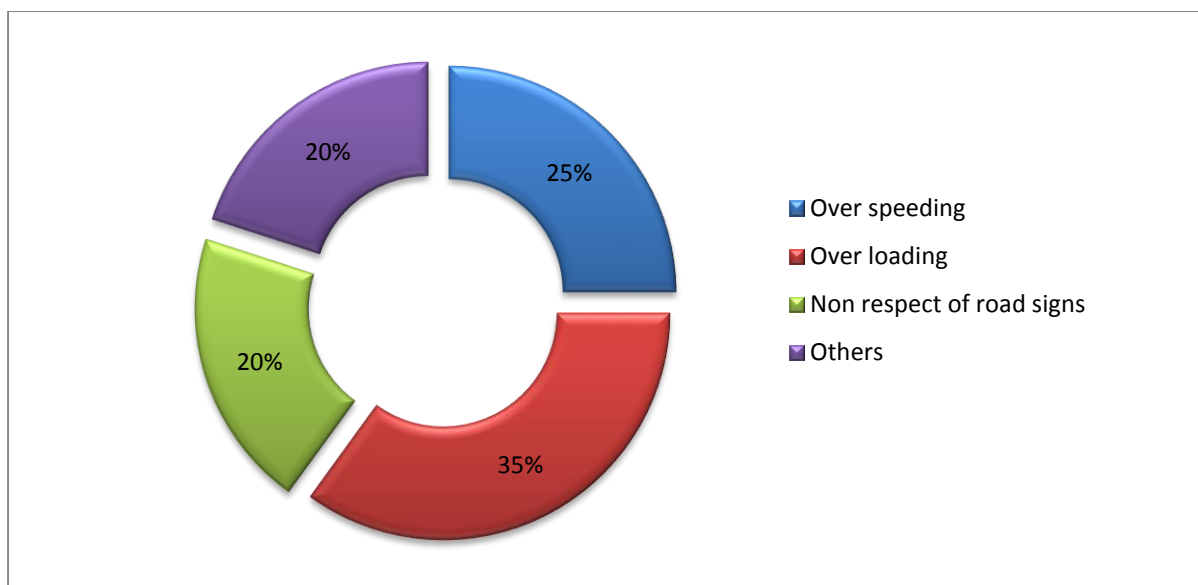


Figure 13: Some deviant driving methods used by drivers on the Sangmelima-Djourn road section

Source; field work 2023

Figure 13 shows that 25% of the respondents perceived that most of the drivers on this road over speed, which most at times lead to accidents and it is common the highway road. Though these accidents have been reduced since the completion of the Sangmelima road section. Overloading represents 35% of most road users who over load goods and people. This result partially from the high need for money, that is, they force their vehicles to over carry. Non respect of road signs and deviation is another problem on the MNHW road (20%). Other related factors like drinking and driving represent 20%. It was noticed that very little is being done to limit such problems by the authorities and uniform men. This was partly because of the bribes and also the social crisis in Sangmelima town.

According to interviews made with some transporters on the Sangmelima-Djourn section concerning the forces of law and order and also bribe taking, 75% of them confirmed that even when they try to avoid the uniform men by fulfilling some of the conditions, they still in collecting bribes by looking for one fault or the other. It has been realized that most of the transporters give what the uniform men demand, to avoid being persecuted. This has become a habit between the transporters and the forces of law and order with every operator knowing how much and to whom to pay. This system has made uniform men not to be

concentrated more on their daily cash flow than transporters respecting the conditions to undertake before plying the road highway.

Table 22: Respondents' view on administrative management

Localities	N/Eff. Res.	Do you agree that uniform officers collect bribes from transporters along the Sangmelima-Djoum road section?			
		Agreed	Highly Agreed	Disagree	Highly disagreed
Akon1	29	13	7	5	4
Akon2	38	19	9	6	4
Admin. Centre	4	2	1	1	0
Lobossi	81	33	21	18	9
Mbeli'i	6	3	1	2	0
Otoakam	10	6	2	0	2
Total	168	76	41	32	19
%	88	45	25	19	11

Source; field work 2023

According to table 22, it indicates that 45% of respondents agreed to the fact that uniform officers are responsible for taking bribes along the road highway, especially along the Sangmelima-Djoum section, meanwhile 25% highly agreed that uniform men are used to be taking bribes along the highway road, which is a very bad practice. Interviews revealed that this action has made uniform men to frequently disturb road users. A driver contacted along the road noted this;

“Every driver before arriving at toll gates has to prepare something to pay the uniform officers, without including the normal toll gate fee that they have to pay”, so they pay additional fee to the uniform officers.

Only 19% of respondents refused the idea of uniform men collecting bribes, while 11% strongly disagree to the view. These are obviously those who are politically ambitious and influenced in one way or the other and will not like to destroy their political ambitions.

3.4. The socioeconomic challenges faced by the MNHW road users in sangmelima

The journey along the major highway from Sangmelima to Djoum and from Djoum to Biessi in Cameroon can offer passengers the rare opportunity to beautiful natural scenery. However, the experience has become worrying due to increasing insecurity caused by armed bandits, robbers and kidnappers. Users of the Trans-African Highway road face various socioeconomic problems such as high prices of spare parts and fuel as well as limited availability of these essentials and proper parking facilities for their vehicles. Socially, the road users face security challenges such as accidents and armed robbery are identified as primary concern to the TAHW road users. Addressing these issues is crucial for this section of the highway to effectively contribute to the socioeconomic development, which it was meant for. Armed robbery and accidents were identified as primary security problems faced by the highway road.

3.4.1. Armed Robbery Along the Sangmelima-Djoum Section

Field surveys have revealed that banditry is rampant along the mentioned highway, with numerous cases already registered. Uniform officers interviewed emphasized that the current situation has been intensified by the recent crisis in Sangmelima. on the 14th October 2019 and also that of the 24th May 2023 (guardian post 2023), this was named the bloody ethnic clashes, where violence erupted in the town when a businessman of the Bamoun extraction killed a client who was a Bulu origin. Consequently, it is imperative to investigate the frequency of banditry acts on the highway.

Table 23: Respondents' perception on frequency of armed robbery

Localities	N/Eff. Res.	What is the frequency of armed robbery attacks on the Sangmellima-Djoum road section?			
		frequent	Very Frequent	Rare	Never
Akon 1	29	15	7	5	2
Akon 2	38	19	9	6	4
Admin. centre	4	2	0	2	0
Lobossi	81	44	19	16	2
Mbeli'I	6	3	1	0	2
Otoakam	10	6	2	1	1
Total	168	89	38	30	11
%	88	53	23	18	6

Source; field work 2023

Table 24 illustrates that banditry incidents along the Cameroon-Congo highway are frequent, often going unreported. According to the response data, 25.5% of respondents perceived these cases as very frequent, while 54.5% consider them to be frequent. Conversely, 16.5% noted theft cases as rare, with another 3.5% stating they never occur. This is because of infrequent road usage and under reporting of accidents. As previously noted, security officers attribute the increase in road insecurity to the socioeconomic crises (the bloody ethnic crisis) as reported by the “guardian post”. Nevertheless, efforts are undertaken by the government to contain such crimes by deploying police officers along the highway.

3.4.2. ACCIDENTS ON THE YAOUNDE-BRAZZAVILLE CORRIDOR

Transportation plays a pivotal role in the Cameroon economy, exerting a significant impact on socioeconomic development. With over 80% of transportation conducted by road in Cameroon, ensuring transportation safety is paramount. As mobility increases in Cameroon,

the risk of accidents leading to loss of lives and properties along the road highway becomes increasingly critical. The result of accidents on our roads are profound, causing significant losses to both current and future workforce productivity, as well as triggering social challenges such as fatalities (death) or severe injuries. In many cases, accidents lead to loss of primary breadwinners (debrouillards), plunging the affected families into poverty and disrupting the education of children. Moreover, accidents place a heavy burden on healthcare services. Hence, it was imperative to assess the frequency of accidents along this highway through respondents' feedback.

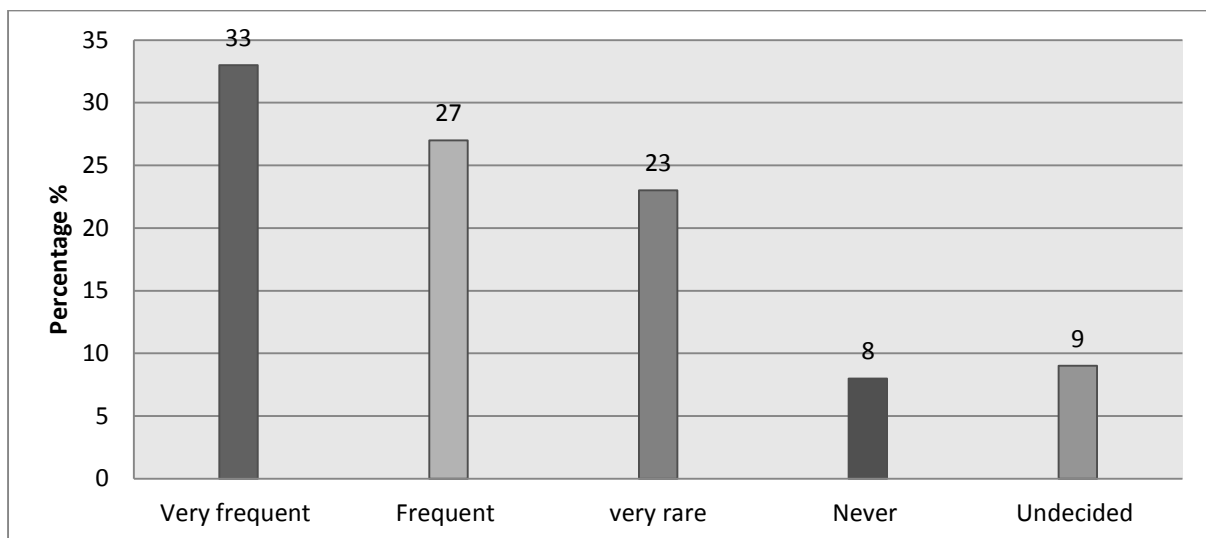


Figure 14: Respondents' perspectives on the frequency of accidents on the Sangmelima-Djoum road section

Source: Field work, 2023

According to figure 14, the incidence of accidents on the road is alarmingly high, with a rate of 33%, compared to respondents score indicating 27% consider it simply frequent. In fact, accidents on many Cameroonian roads claim as many lives as malaria. Interviews emphasized that the frequency of accidents on the highway is remarkably high and concerning which demands a greater attention from the authorities.

Only 23% of the respondents believe that accidents occurring on this road are very rare. This is likely because these respondents infrequently use the highway, coupled with the fact that incidents are often unreported. Additionally, 8% believe that accidents never occur on the road, while 9% are undecided about the frequency of accidents along the highway. Considering the occurrence of such accidents, it was important to investigate some of the causes behind them. As mentioned by the philosopher “Spinoza”; a determined cause

necessarily results to an impact. If there is no determined cause given, it is impossible for an impact to occur (Kwadja, 2020). Kan also mentioned that all changes occur based on the law of connection between cause and effect and if the two elements are brought together, then we can talk of the law of connection between causes and effect (Eric W. 2004). This has been the same situation in sangmelima for so many years today.

3.4.2.1. SOME FACTORS THAT CONTRIBUTE TO ACCIDENTS ALONG THE CAMEROON-CONGO HIGHWAY

An accident is an unpredicted event that happens by chance. A road traffic accident specifically happens due to vehicle operations and can range from minor accidents to fatal outcomes. Accidents are not random occurrences; they are caused by various factors. Understanding the causes of road traffic accidents is crucial for prevention. In the surveys conducted along the Sangmelima-Djoum highway, three main categories of road accidents were identified. Human, mechanical and environmental factors.

3.4.2.2. HUMAN FACTORS

The human factors account for 80% of road traffic accidents. This category includes drivers, pedestrians, law enforcement agents and engineers. Many drivers exhibit rude and reckless behaviour, disregarding traffic signs and regulations. Factors such as lack of proper training, irresponsible driver habits, speeding, driving under the control of drugs, impatience and over loading contributes to accidents.

3.4.2.3. MECHANICAL FACTORS

This also plays a significant role in road accidents. Vehicles defect (fail), particularly in tires and engines, stemming from poor maintenance are common contributors. The use of substandard products such as second hand tires and spare parts further exacerbates the issue. Break failure, burst tire and engine failure are some examples of mechanical failures leading to accidents.

3.4.2.4. ENVIRONMENTAL FACTORS

They equally play a vital role in road accidents. The environmental conditions may range from weather conditions, road maintenance, inadequate street lights, heavy traffic resulting from congestion, poor air qualities including air pollutants and inadequate pedestrian crossings. These factors may cause the driver or road users to be uncomfortable and tired. When they insist to drive, the result may be an accident occurrence.

The consequences of road traffic accidents in Cameroon are severe, causing significant social and economic losses. Lives are lost and properties worth millions are damaged. The impacts extend beyond monetary losses to include trauma, loss of lives, and social disruptions. Victims may suffer from physical disabilities or psychological trauma, leading to long-term consequences for individuals and families.

To address road traffic accidents effectively, comprehensive strategies and efforts are required to mitigate both human and mechanical factors. It is essential to prioritise road traffic measures and promote responsible driving behaviour to prevent future accidents and minimize their devastating effects on the society.

3.4.3. INFLATION

Inflation is one of the economic problems facing the road highway. Inflation is defined as the situation whereby, there is a general increase in price in a community. In other words, it is the market situation where more money chases fewer goods. Since the launching of the road project, more people have been attracted in Sangmelima town and also the accessibility granted by the road infrastructure, prices of agricultural products have increased in Sangmelima. Since it was difficult to access the village between Sangmelima and Djoum, most villagers sold their goods at cheaper prices, but since it is now possible to travel to Sangmelima and sell their products at higher prices and at a cheaper transport cost, they therefore increase prices of their goods. Another reason for this is the growth that has been influenced by the road network. An increased population therefore means that there is an increase in demand for agricultural products and this further leads to a situation of shortage in the agricultural products, if precautions are not taken.

Field survey has proven that a good number of agricultural products have increased in price. For instance, bunches of plantain, bag of cocoyam, bag of cassava, yam amongst others have all witnessed an increase in prices.

A respondent that was identified in the Sangmelima communal market outlined that, *“the prices of these products have been in an increase since the construction of the road. Many farmers prefer to go and sell their farm products in Djoum and others prefer to sell to strangers who buy to go and sell back in Congo”*.

Table 24: Some agricultural products and the change in their prices before and after the road construction

PRODUCTS	QUANTITY	OLD PRICE (CFA francs)	NEW PRICE (CFA francs)
Cassava	1 bag	6500	9000
Cocoyam	1 bag	8000	17000
Plantain	1 bunch	2000- 2500	3500-4500

Source; developed by the author 2024

As seen from the table 25 above, the price of cassava has witnessed an increase of 3500 after the road construction. This is because the town has witnessed a population growth, which has further led to a limited supply in the quantity of cassava to feed the whole population. Another reason is that; population increase has also led to limited land for agriculture. Thus the available goods have boosted in their prices.

The price per bag of cocoyam has also changed with the construction of the road network. Table 18 depicts that the price of cocoyam has seen an increase from 8000 CFA Francs to 17000 CFA Francs which is more than double of the initial price. That is about 9000 CFA Francs has increased on the original price.

Another is the price of a bunch of plantain. Table 18 shows that a bunch of plantain which cost 2000 to 2500 has increased to 3500 to 4500 CFA Francs. The increase in the price of plantain can be attributed to the limited land for the plantation. It demands enough land to plant a plantain tree. The prices of fertilizers tend to discourage farmers from planting. This causes them to produce fewer plantains as they only depend on the natural fertility of the soil

Nevertheless, the road network has not only led to increase in prices of goods, but also, there is a constant supply of manufactured goods coming from different parts of the country. Goods such as floor, rice, amongst others which are not produced in Sangmelima can easily reach Sangmelima town and at a lower transport cost.

In order to solve the problem of inflation, production has to be increased in the town. Both the agricultural produce and the industrial products have to be increase in the Sangmeima subdivision and Sangmelima town in particular.

Other economic problems include; high prices of spare parts, fuel and the absence of parking facilities along the road.

3.4.4. ABSENCE OF FUELING STATION

The absence of fueling stations along road highway can have several effects on road users. Firstly, it can lead to inconvenience and stress for travelers, especially those with low fuel levels or long distances to cover. Running out of fuel on a highway without nearby refueling options can result in delays, stranded vehicles and safety hazards.

Moreover, the lack of fueling stations can hinder economic activities along the highway, affecting businesses that rely on highway traffic for customers. It may also discourage tourism and travel, impacting local economies and reducing revenue opportunities for businesses in nearby areas.

Additionally, the absence of fueling stations along the Cameroon-Congo highway may lead to environmental concerns, as vehicles may need to detour to find fuel, increasing carbon emission and fuel consumption.

Overall, the absence of fuelling stations along the highway can disrupt travel, hinder economic growth and have environmental consequences.

It has been seen thanks to field work carried out by the researcher that, there is no fuelling station along the Sangmelima-Djoum road section. This is one of the unexploited opportunities that face the road. Because of this, cars ploughing this road network face difficulty when they have shortage of fuel. Only clandestine fuel is sold along the road, and which is very expensive. This fuel at times is not of good quality, causing the cars to constantly stop on the road and as a result, an accident may occur.

3.4.5. ABSENCE OF GARAGE

The absence of garage along a road highway can have significant implications for road users. Firstly, it can lead to inconvenience and frustration for travellers who experience vehicle breakdowns or mechanical issues while on the road. Without nearby access to

necessary spare parts, drivers may face extended delays, increased cost for repairs, and potential safety risks if they attempt to continue driving with a malfunctioning vehicle.

Moreover, the absence of spare parts along a highway, can impact local economies and businesses that rely on providing automotive services to travellers. It may also discourage tourism and travel along that route as concerned about vehicle reliability and repair options could repel potential visitors.

Additionally, the lack of spare part availability can affect logistics and freight transportation, potentially disrupting supply chains and impacting businesses that rely on timely delivery of goods.

To sum up, the absence of garage along a road highway can create logistical challenges, safety concerns and economic impacts for both travellers and local communities. Thanks to the field surveys, it was seen that no garage or repairing shop for automobiles was present on the road highway.

3.5. ENVIRONMENTAL CHALLENGES

It should be noted that despite the numerous benefits we derive from the environment such as raw materials, food, shelter, and pharmaceuticals and the ongoing efforts to establish sustainable environmental management, environmental degradation continues to worsen. Increasing human populations and the pursuit of a better quality of life through socio-economic activities have had negative impacts on environmental management, particularly in developing countries. The level of concern and sense of urgency have escalated at local, national, and international levels. The extent of environmental degradation varies across different countries and regions (Holtz-Eakin & Seldon, 1995). According to Kalipeni (1992), poverty is the primary cause of the depletion of natural resources and environmental degradation in Africa.

Population growth and the resulting economic activities exert significant pressure on the natural environment. This pressure is evident in the rapid decline of tropical forests, global warming, and increasing environmental pollution (United Nations, 1992).

3.5.1. The Environmental Implications of Socio-Economic Development in Sangmelima

The concentration of population in urban areas necessitates the provision of basic facilities to accommodate the demographic structure (Ogundele et al., 2011), which negatively impacts the environment. As the philosopher Spinoza said, “From a determined cause necessarily results an effect and vice versa. If no determined cause is given, it is impossible for an effect to occur” (Kwadjia, 2020). According to Kan, “All changes occur following the law of connection of cause and effect,” and if two elements are correlated, there is a cause-and-effect link between them, this is known as the law of causality. This law states that every effect has a cause and every cause has an effect. In other words, everything that happens (the effect) is a result of something that happened before (the cause). (Eric W., 2004). This situation exists between socio-economic development and the environment of Sangmelima town.

From various interviews conducted, direct field observations, and informal discussions held, it is evident that socio-economic development has brought a plethora of environmental issues to Sangmelima, including unsound solid waste management practices leading to various forms of pollution (air, soil, and water), loss of biodiversity, and erosion.

3.5.2. Unsound Waste Management Practices

Solid waste management is the process of generating, collecting, storing, treating, and disposing of solid wastes in a way that is harmless to humans, plants, animals, the ecology, and the environment in general. It involves the judicious application of a range of options to achieve an optimal system of waste management and resource recovery. Solid waste management in Cameroon is governed by Law No. 96/12 of August 5, 1996, relating to Environmental Management. According to the law:

“Wastes shall be any residue from production, processing or utilization process, any substance or material produced or, more generally, any movable and immovable good abandoned or intended to be abandoned,” and waste management “shall be the collection, transportation, recycling and elimination of waste, including monitoring of disposal sites.”

However, increasing rates of socio-economic development have brought problems in the management of solid wastes in Sangmelima. Municipal solid wastes have not only increased in quantity but also in composition, shifting from less organic matter to more paper, plastics, glass, metal, and other substances. Sangmelima produces solid waste

regularly, leading to a considerable increase in the volume of waste from various sources such as domestic, commercial, and institutional. A significant concern is that most of these wastes are non-biodegradable. This issue is further exacerbated by low collection rates and unscientific handling methods. The monthly average waste collected in Sangmelima ranges between 1,100 to 1,500 tons, resulting in an annual average of 13,200 to 18,000 tons (Sangmelima Council, 2020).

Treatment is either through recycling via composting or systematic burial in a local landfill. Generally, solid waste is disposed of in low-lying areas, on the outskirts of neighbourhood, along roadsides and streets, in gutters, in nearby bushes, in rivers and streams, in public bins, or in any vacant place where people believe they will not be apprehended. According to fieldwork, only 10% of households sort their waste before disposal, while 90% do not. Waste is typically mixed, whether degradable or non-degradable (see plate below)



Plate 7: Inefficient waste management at Akon

Fieldwork 2024

Such a system of solid waste management is an environmental problem in Sangmelima because it is rudimentary and unscientific, and therefore not based on a sustainable strategy. Richardson (1994) warned that locations where waste is deposited without proper management may be considered ‘remote’ today but could become settlement sites tomorrow. This implies that we are currently burying environmental time bombs that may explode in the future, affecting thousands of people. This practice directly contravenes Section 42 of the 1996 law on environmental management in Cameroon, which stipulates that “*for sustainability, waste should be treated in an ecologically rational manner to reduce its toxic effects on humans, natural resources, fauna, flora, and the general quality of the environment*”.

The strategy is failing in Sangmelima because sound management techniques have not been incorporated into the current waste management dynamics. This strongly counteracts the concept of Integrated and Sustainable Waste Management (ISWM), which advocates for the selection and application of appropriate techniques and management programs to achieve specific and desired waste management objectives and goals. As a result of poor management practices, several types of pollution have surfaced.

3.5.3. Air Pollution

According to a report by the World Health Organization (WHO) Expert Committee (1991), about 500 million people in developing countries are exposed to the risks of air pollution in urban areas. Among the sources of air pollution in Sangmelima are gas exhausts resulting from the anaerobic fermentation of organic matter. These gases are often charged with methane, sulphur, or nitrogen compounds capable of causing explosions.

In addition to smoke, the incineration of waste releases mineral fibres (nitrogen, hydrocarbons, and hydrochloric acids) which are harmful to the environment. Urban waste in Sangmelima is managed through incineration. Such fires emit carbon dioxide (CO₂), nitrous dioxide (NO₂), nitrogen oxides (NO_x), and ammonia (NH₃), all greenhouse gases (GHG), which contribute to the destruction of the ozone layer.



Plate 8: Air pollution caused by burning of plastics and other materials at Bissono

Field work 2024

3.5.4. Soil Erosion and Degradation

Soil erosion refers to the wearing away of topsoil by the natural physical forces of water and wind. It can be relatively unnoticed or occur at an alarming rate, causing significant loss of topsoil. Deforestation, as explained above, and the various land uses resulting from it are the main causes of soil erosion in Sangmelima. After deforestation, the landscape is exposed, and the soils are left naked and vulnerable to erosion (Photo 3).



Picture 1: Gully erosion around Nkolguet

Source: Fieldwork (2024)

Surface runoff and wind on a surface produce four main types of erosion: splash erosion, sheet erosion, rill erosion, and gully erosion. Splash erosion is generally the first and least severe stage in the soil erosion process, followed by sheet erosion, then rill erosion, and finally gully erosion (the most severe). Gully erosion occurs when runoff water accumulates and rapidly flows in narrow channels during or immediately after heavy rains, removing soil to a considerable depth. Gully erosion in Sangmelima is caused by massive deforestation for large projects such as the Sangmelima Municipal Market and the Sangmelima Reference Hospital.

3.6. CONCLUSION

In conclusion, the construction of the MNHW road came as a messiah to Sangmelima subdivision and its residents, reviving the town's economy and creating employment opportunities. However, the road has also presented challenges, notably with the incidence of armed robbery and frequent accidents. To fully capitalise on the benefits of the road infrastructure, it is important to effectively manage and address these issues.

Just as vehicle maintenance is crucial for safety, maintaining the conditions of the road infrastructure is equally important. Unfortunately, the management of roads in Cameroon, led by organizations like MINTP and MINT has been lacking. Poor road conditions have resulted in loss of lives, highlighting the urgent need for improvement.

To enhance road safety, authorities must conduct regular surveys to identify accident-prone areas and install warning signs accordingly. Potholes, especially on highways should be promptly repaired. Additionally, all roads should be well marked with clear traffic signs. Traffic management strategies, such as those outlined by Rodrigue (2013), include measures like signal optimization, road widening, and the use of intelligent transportation systems. These strategies can help reduce congestion and improve the overall efficiency of transportation networks.

Road accident is a phenomenon that is common and affects everyone, regardless of time or location. Addressing road safety in Cameroon demands a comprehensive and collaborative approach from government agencies, law enforcement, and road users alike. Only through concerted efforts can we effectively reduce the occurrence of impacts of road traffic accidents in Cameroon.

To address these challenges, several strategies have been proposed. Proactive road maintenance, as discussed by Odeleye (2000), involves regular inspections and timely repairs to prevent road deterioration. This approach can extend the lifespan of road infrastructure and reduce long-term maintenance costs.

GENERAL CONCLUSION

Summary of Findings, Conclusions, and Suggestions

Introduction

This study focuses on the influence of the Cameroon-Congo road infrastructure on the socio-economic development of Sangmelima town. To adequately diagnose the issues related to urbanization, cross-border trade, and the challenges faced by road users, a general objective and three specific objectives were established. These objectives aim to evaluate the influence of the road infrastructure on urbanization, the promotion of cross-border trade, and the assessment of the challenges confronting road users. Data regarding the extent to which these objectives have been attained is presented in the three chapters of this study. This data is also used for testing and validating the stated hypotheses.

Testing of Hypotheses, Analysis, and Discussions of the Results

Each hypothesis was tested based on the theory of perception in action, drawn from respondents' views and quantified through the survey instrument administered. The notion that perception is a requisite property of animate action, meaning that without perception, research would be unguided, and without taking action on that perception, it would serve no purpose, constituted the starting point for a series of verifications and validations of the stated hypotheses. Knowledge forms the foundation of a process in which attitudes, norms, and perceptions of possibilities to act are carefully monitored to clarify and decide between behavioural alternatives.

Research Hypothesis 1

Research hypothesis 1 guided the study to collect relevant data to establish a link between the highway road infrastructure and urbanization in Sangmelima town. It posits that development follows where a road passes. It is believed that the rapid rate of urbanization in Sangmelima has increased as a result of the construction of the highway road infrastructure. To properly verify this hypothesis, Table 7 of the study was used to examine the correlation between the urbanization rate and the Cameroon-Congo road infrastructure.

Table 25: The construction of the highway and urbanization in Sangmelima town

Localities	Number of respondents	Do you agree that the town of Sangmelima has experienced urbanization due to the construction of the highway?		
		Agree	Disagree	Undecided
Akon1	29	20	6	3
Akon2	38	26	9	3
Admin centre	4	3	1	0
Lobossi	81	63	13	5
Mbeli'i	6	3	2	1
Otoakam	10	8	1	1
Total	168	123	32	13
%	88	73	19	8

Source; field work 2023

The results demonstrated a significant correlation between the new highway and the rapid urbanization of Sangmelima. The development of residential areas, commercial buildings, and public infrastructure was notably higher in proximity to the highway, underscoring the role of road transport in accelerating urban growth.

Research Hypothesis 2

This hypothesis aims to establish a link between the construction of the Yaounde-Brazzaville corridor and the improvement of cross-border trade in the Sangmelima Sub-division. The responses from the respondents facilitated the verification and validation of this hypothesis.

“It is said that where a road passes, development follows.” The construction of the Sangmelima-Djoum road section has brought several developmental opportunities to the town of Sangmelima and the entire Sub-division. To verify this assertion, the responses of the respondents were analyzed based on their perceptions (Table 8).

Table 26: Respondents' perception on cross-border trade and livelihood enhancement in Sangmelima subdivision

Localities	Number of respondents	Do you agree that the town of Sangmelima has experienced an increase in trade, commerce and accessibility due to the construction of the highway, which has promoted socioeconomic development in the subdivision?		
		Agree	Disagree	Undecided
Akon1	29	20	7	2
Akon2	38	23	11	4
Admin centre	4	4	0	0
Lobossi	81	59	16	6
Mbeli'i	6	4	1	1
Otoakam	10	7	1	2
Total	168	117	36	15
%	88	69.5	21.5	9

Source; fieldwork 2023

The findings indicated that the construction of the road significantly enhanced trade and commerce activities. Improved transportation infrastructure, reduced travel times and costs, increased the flow of goods and services (accessibility), and contributed to the livelihoods of local residents by creating more business opportunities and jobs.

Hypothesis 3

Hypothesis 3 aims to evaluate the challenges faced by users of the MNHWR road. The feedback from respondents about these challenges facilitated the verification and validation of the hypothesis. When an economic activity encounters numerous obstacles, its effective operation becomes difficult. To verify this claim, the responses from the respondents were analyzed (figure 15).

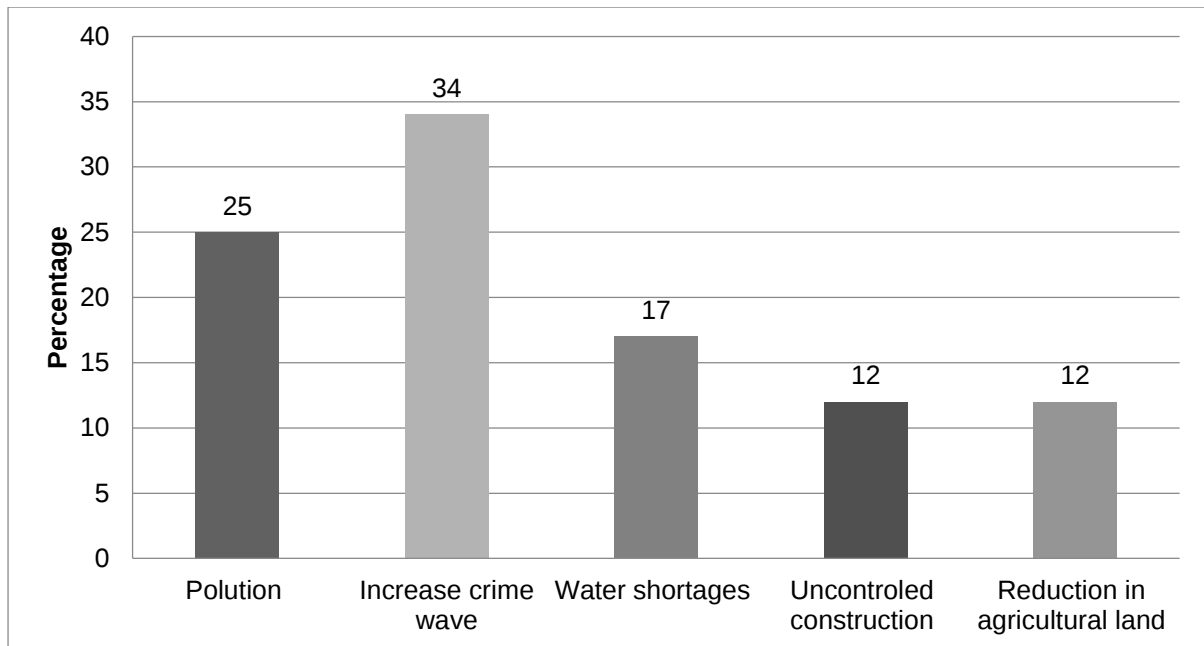


Figure 15: Various aspects of challenges faced by the MNHW road users in Sangmelima town

Source; developed by the author, 2023

The analysis revealed several significant challenges faced by road users, including poor road maintenance, frequent traffic congestion, and safety concerns. These issues hinder the full economic potential of the road infrastructure, suggesting the need for ongoing investment in road maintenance, traffic management, and safety improvements.

The figure above presents the various challenges faced by the MNHW road users in Sangmelim town, as perceived by respondents. The results indicate that road development, while beneficial for connectivity, has also generated significant environmental, social and land use challenges.

Pollution recorded the highest proportion of responses, indicating that it is the most prominent challenge associated with the road highway. This pollution highly stems from increased vehicle traffic, dust from road, noise, and improper waste disposal along the road corridor. The high percentage suggests that environmental degradation has become major concern for road users in nearby residents, potentially affecting public health and overall quality of life.

The increase in crime wave was also reported by a considerable proportion of respondents. Improved road accessibility often attracts population growth, informal commercial activities, and increased mobility, which in the absence of adequate security

measures may contribute to high crime rates. This finding implies that road infrastructure development should be accompanied by enhanced security arrangement, such as street lightening, police patrols and community surveillance, to mitigate crime related challenges.

Water shortages accounted for a notable share of responses, highlighting the direct effects of road construction and urban expansion on essential services. Construction activities may disrupt existing water supply systems, while increased settlement along road raises water demand. This challenge reflects the need for integrated planning that considers water infrastructure alongside road development.

Uncontrolled construction and reduction in agricultural land were equally identified as significant challenges. The MNHW road has encouraged rapid and often unregulated development along its route, leading to the conversion of agricultural land into residential and commercial uses. This trend threatens local food production and undermines sustainable land management. The reduction in agricultural land may have long-term implications for livelihoods, particularly for households that depend on farming as a primary source of income.

In general, the findings suggest that although the Cameroon-Congo road highway has improved accessibility and economic opportunities in Sangmelima town, it has also introduced complex challenges that require urgent attention. Addressing these challenges calls for coordinated efforts in environmental managements, urban planning, land-use regulation, security enhancement and the provision of basic services. Without such integrated measures, the negative impacts identified may under-shadow the potential benefit of the road infrastructure in the log run.

Conclusions and Suggestions

Conclusions:

Urbanization: The Cameroon-Congo road infrastructure has acted as a significant catalyst for urbanization in Sangmelima, facilitating the expansion of residential and commercial areas. This development has led to an increase in housing, businesses, and public infrastructure, illustrating the crucial role of road transport in driving urban growth.

Cross-Border Trade: The development of the Yaounde-Brazzaville corridor has substantially boosted cross-border trade. This enhancement in road infrastructure has stimulated economic activities, leading to increased trade flows, business opportunities, and improved livelihoods for local residents. The ease of movement for goods and services has fostered a more dynamic economic environment in the region.

Challenges: Despite these substantial benefits, road users face significant challenges that need to be addressed to fully leverage the potential of the road infrastructure. These challenges include poor road maintenance, frequent traffic congestion, and safety concerns (armed robbery, circulation of illicit products and consumption of harmful goods), which impede the efficient use of the road network.

Suggestions:

Improvement of Road Maintenance: Regular and systematic maintenance of the road infrastructure is crucial to ensure its longevity and reliability. Proactive maintenance schedules and timely repairs can prevent deterioration and enhance the overall quality of the roads.

Traffic Management: Implementing better traffic management strategies can help reduce congestion and improve the efficiency of transportation. This includes the use of traffic control measures, such as signal optimization, road widening, and the implementation of intelligent transportation systems to manage traffic flow effectively.

Safety Enhancements: Investing in road safety measures is essential to reduce accidents and improve the overall safety for road users. This can be achieved by installing proper signage, adequate lighting, and enforcing traffic laws rigorously. Additionally, educating road users on safe driving practices can contribute to a safer road environment.

Community Engagement: Continuous engagement with local communities is vital for identifying specific issues faced by road users and developing targeted solutions. Community feedback can provide valuable insights into road conditions and usage patterns, allowing for more informed decision-making and the implementation of solutions that directly address user needs.

By addressing these suggestions, the Cameroon-Congo road infrastructure can further enhance its contribution to the socio-economic development of Sangmelima town.

Enhanced road transport infrastructure will not only support urbanization and cross-border trade but also ensure a safer and more efficient transportation system for all users.

BIBLIOGRAPHY

- Anas A, Arnott R and Small KA (1998).** Urban spatial structure. *Journal of Economic Literature* 36: 1426–1464.
- Anas, A., Arnott, R. and Small, K.A. (1998).** Urban spatial structure. *Journal of Economic Literature* 36: 1426–1464.
- Banomyong, (2010) et Brooks, (2014).** Developing and validating a national cost in Thailand
- Baum-Snow, N. (2007).** Did highways cause suburbanization? *Quarterly Journal of Economics* 122: 775–805.
- BAUM-SNOW. (2007).** Did Highways cause suburbanization? *The Quarterly Journal of Economics*. V. 122, n. 2, p. 775-805, May 2007
- Conley, T.G.E and Ligon, (2002).** Economic distance and cross spillovers
- CHEIN, Flávia; ASSUNÇÃO, J.J. (2012).** How does Emigration affect Labor Markets? Evidence from Road Construction in Brazil. Manuscript. July, 2012.
- CHRISTALLER, W. (1966).** Central places in southern Germany. New Jersey: Prentice-Hall, 1966. 230p.
- Dena, K. (2017).** The impact of urban proximity, transport accessibility and policy on urban growth: A longitudinal analysis over five decades. *Journal of urban Analytics and city science*. 2019, Vol. 46(6) 1000–1017. DOI: 10.1177/2399808317740355. Pp 1001-1016.
- Duranton, G. and Turne, M.A. (2012).** Urban growth and transportation. *Review of Economic Studies* 79: 1407–1440.
- Gina Porter (2012).** Reflections on a century of road transport developments in west Africa and their (gendered) impacts on the rural poor
- GLAESER, E., KOHLHASE, J. (2014).** Cities, regions and the decline of transport costs. Cambridge, Mass.: Harvard Institute of Economic Research, 2003. (Discussion papers, 2014)
- Gwilliam 2002; Suzuki et al. 2013.** Linking urban transport and land use in developing countries
- Gwilliam 2003.** Urban transport in developing countries
- Holtz-Eakin D. and Seldon T.M. (1995).** Stoking the fires? CO2 emissions and economic growth. *Journal of public economics*, Volume 57
- J Atack (2010).** Did railroads induce or follow economic growth? Urbanization and population growth in the American Midwest, 1850 -1860

- J Atack et al. (2009).** Did railroads induce or follow economic growth?
- Kalipeni E. (1992).** Population growth and environmental degradation in Malawi. *Africa Insight*.
- Koopmans, C., Rietveld, P. and Huijg, A. (2012).** An accessibility approach to railways and municipal population growth, 1840–1930. *Journal of Transport Geography* 25: 98–104.
- Law N0 1996/012 of 5th August 1996** relating to Environmental Management in Cameroon.
- Levinson, D. (2008).** Density and dispersion: The co-development of land use and rail in London. *Journal of Economic Geography* 8: 55–77.
- Lösch, A. (1954).** The economics of location. New Haven: Yale University, 1954. 520p
- Michaels, (2008).** The Effect of Trade on the Demand for Skill – Evidence from the Interstate Highway System. *Review of Economics and Statistics*. Vol. 90, No. 4, p; 683–701, Nov. 2008.
- Mojica L and Marti-Haneberg J (2011).** Railways and population distribution: France, Spain, and Portugal, 1870–2000. *Journal of Interdisciplinary History* 42: 15–28. Muller K, Steinmeier C and Kuchler M (2010). Urban growth along
- Odeleye, A. (2000).** Public-private participation to rescue railway development in Nigeria. *Japan railway and transport review*, 23, 42-49
- Porter, G. (2012).** Reflections on a Century of Road Transport Developments in West Africa and Their (Gendered) Impacts on the Rural Poor. *EchoGeo*, 20, 1-14.
- Sangmelima Council. (2015).** Sangmelima Community Development Plan 2015
- Wegener M and Furst F (1999).** Land-Use Transport Interaction: State of the Art. **Deliverable D2a of the Project TRANSLAND**. Dortmund: Universitat Dortmund, Insitut fur Raumplanung.

Webography

1. <http://idev.afdb.org/en/document/transport-africa-african-development-bank%E2%80%99s-intervention-and-results-last-decade> (01-05-2024)
2. <http://www.hypergeo.eu/spip.php?article187> 20-07-2024)
3. https://www.researchgate.net/publication/324759369_Road_transport_in_Africa_Analysis_and_appeal_for_innovation (03-03-2023)
4. <https://sustainabledevelopment.un.org/content/documents/AfricanReviewReport-on-TransportSummary.pdf> (08-03-2023)
5. https://www.theigc.org/wpcontent/uploads/2017/03/TransportGrowthBrief_FINAL_WEB.pdf (09-11-2024)
6. <https://www.weforum.org/agenda/2015/12/how-far-do-roads-contribute-to-development/> (11-02-2024)
7. <https://projectsportal.afdb.org/dataportal/VProject/show/P-Z1-DB0-048?lang=en> (19-05-2023)
8. <https://study.com/learn/lesson/rostows-stages-economic-growth-concept-list-criticism.html#:~:text=Rostow's%20Model%20of%20Development%20is,and%20economic%20growth%20and%20development.> (14-06-2022)
9. <https://www.wipo.int/wipolex/en/legislation/details/5800> (16-06-2023)
10. <https://www.ijassjournal.com/2024/V712/41466639131.pdf> (22-19-2024)
11. <https://www.jstor.org/stable/26202644> (02-05-2025)
12. <https://www.sciencedirect.com/science/article/abs/pii/S0197397509000757> (05-10-2024)
13. <https://www.mdpi.com/2071-1050/7/6/7784> (09-11-2023)
14. <https://www.tandfonline.com/doi/full/10.1080/25741292.2018.1454291> (23-11-2023)
15. <https://openknowledge.worldbank.org/entities/publication/58557d74-baf0-5f97-a255-00482909810a> (17-04-2023)
16. <https://durham-repository.worktribe.com/person/208782/gina-porter/outputs?page=1&Year=2012> (17-04-2023)
17. <https://journals.openedition.org/echogeo/pdf/13116> (14-06-2022)
18. <https://journals.openedition.org/echogeo/13116?lang=en#tocto1n3> (08-10-2023)

19. https://www.researchgate.net/publication/374359751_The_lived_experiences_of_women_workers_in_Africa's_transport_sector_Reflections_from_Abuja_Cape_Town_and_Tunis (21-09-2024)
20. https://www.researchgate.net/publication/293796470_Did_Railroads_Induce_or_Follow_Economic_Growth (09-09-2024)
21. https://www.researchgate.net/publication/248987187_Urban_transport_in_developing_countries 20-10-2023

APPENDICES

THE UNIVERSITY OF YAOUNDE 1

FACULTY OF ARTS, LETTERS
AND SOCIAL SCIENCES

GEOGRAPHY DEPARTMENT



UNIVERSITE DE YAOUNDE 1

FACULTE DES ARTS, LETTRES
ET SCIENCES HUMAINES

DEPARTEMENT DE
GEOGRAPHIE

A questionnaire survey

**Topic: THE INFLUENCE OF THE CAMEROON-CONGO ROAD INFRASTRUCTURE
ON THE SOCIO-ECONOMIC DEVELOPMENT OF SANGMELIMA TOWN**

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

Researcher: **KINGSLY MELO N.**

Academic Year: 2023/2024

Instruction: Answer the following questions by ticking in the bracket of the correct answer and by filling the space provided.

General questions

1. What is your age group?
☐ Under 18 ☐ 18–35 ☐ 36–50 ☐ 51+
2. Quarter of residence: ☐ Akon 1 ☐ Akon 2 ☐ Mbeli'i ☐ Lobo-si ☐ Admin Centre ☐ Otoakam ☐ Other: _____
3. Occupation: _____
4. How long have you lived in Sangmelima? _____ years
5. How would you describe the state of the main road near your quarter?
☐ Excellent ☐ Good ☐ Fair ☐ Poor ☐ Very poor
6. Has the Cameroon-Congo road improved your ability to reach services such as:
☐ Schools ☐ Hospitals ☐ Markets ☐ Workplaces ☐ Farms
7. Have you noticed an increase in the number of public transport vehicles since the road was built? ☐ Yes ☐ No
8. Has access to electricity in your household improved since the road construction? ☐ Yes ☐ No
9. Do you believe that road infrastructure has improved housing in your quarter? ☐ Yes ☐ No
10. Are there more schools or students in your area since the road was constructed? ☐ Yes ☐ No
11. Do you feel that your personal security has improved? ☐ Yes ☐ No
12. Have you observed any environmental changes (deforestation, erosion, air pollution) since road construction? ☐ Yes ☐ No
13. Do you believe that your standard of living has improved since the road construction? ☐ Yes ☐ No

14. Do you consider the road project a major contributor to local development? ☐ Yes ☐ No
15. What one thing would you recommend to make the road more useful to your community?

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ROAD USERS & TRANSPORTERS



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DEPARTEMENT DE
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ROAD USERS & TRANSPORTERS

Focus: road conditions, safety, mobility, income, maintenance

1. What type of transport service do you operate?
☐ Taxi ☐ Motorbike ☐ Truck ☐ Bus ☐ Other
 2. How long have you worked as a driver/rider on this road? _____ years
 3. How would you rate the safety of the Sangmelima–Djoum road section?
☐ Very safe ☐ Fairly safe ☐ Unsafe ☐ Very unsafe
 4. Have you ever witnessed or been involved in an accident on this road? ☐ Yes ☐ No
 5. What are the most common issues affecting transport along this road?
☐ Potholes ☐ Insecurity ☐ Lack of road signs ☐ Lack of gas stations ☐ Absence of garages
 6. Since the road was constructed, has your daily income:
☐ Increased ☐ Decreased ☐ Stayed the same
 7. Are there regular road maintenance works along the corridor? ☐ Yes ☐ No
 Do you pay taxes or fees related to road usage? ☐ Yes ☐ No
 - If yes, do you feel these fees are justified by the road quality? ☐ Yes ☐ No
 8. Do you transport agricultural goods or farm inputs? ☐ Yes ☐ No
 9. What are your suggestions for improving road safety and services for transporters?
-

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LOCAL FARMERS AND TRADERS

Focus: economic change, agriculture, market access, trade

1. Do you grow agricultural products? ☐ Yes ☐ No
2. Are you able to transport your farm produce to the market more easily now? ☐ Yes ☐ No
3. Has the road helped reduce post-harvest losses (e.g., food rot during transport)? ☐ Yes ☐ No
4. Has access to fertilizers or tools improved because of the road? ☐ Yes ☐ No
5. Have more customers (locals or foreigners) started buying from your shop/stand due to better roads? ☐ Yes ☐ No
6. Has trade with Congolese or other regions increased in your experience? ☐ Yes ☐ No
7. In what ways has your business or farming benefited most from the road?

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ADMINISTRATIVE STAKEHOLDERS

Focus: planning, management, institutions, challenges, policy

Targeted: officials from MINTP, Municipal Councils, Forces of Law and Order

1 Name of institution/organization: _____

What development actions has your office supported along the Cameroon–Congo road?

2 What major challenges do you face regarding road maintenance or traffic regulation?

☐ Budget constraints ☐ Equipment shortage ☐ Security ☐ Land conflicts ☐ Coordination with ministries

3 Are there ongoing projects tied to the road infrastructure and socio-economic development in Sangmelima? ☐ Yes ☐ No

• If yes, list one or two: _____

4 Have you observed any environmental or land management issues due to road development? ☐ Yes ☐ No

5 Are residents actively involved in any urban or transport planning processes? ☐ Yes ☐ No

6 What has been the administrative response to the growth of informal activities (markets, housing, transport) near the road?

7 What policy recommendations would you suggest to improve road-related development and control urban sprawl?

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DEPARTEMENT DE
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INTERVIEW GUIDE FOR THE DIVISIONAL OFFICER OF SANGMELIMA

Topic: THE INFLUENCE OF THE CAMEROON-CONGO ROAD INFRASTRUCTURE ON THE SOCIO-ECONOMIC DEVELOPMENT OF SANGMELIMA TOWN

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

Researcher: **KINGSLY MELO N.**

Academic Year: 2023/2024

Section A: General Information

1. Name of Respondent:
2. Title/Function:
3. Duration in current post:
4. Department/Service:

Section B: Administrative Oversight and Planning

5. What is the role of the Divisional Office in road infrastructure planning and monitoring in Sangmelima?
6. Are there any strategic development plans for road infrastructure in the Sangmelima subdivision?
7. How do you coordinate with other stakeholders (municipalities, technical services, NGOs, etc.) on road development projects?
8. Are development plans in Sangmelima aligned with national or regional development frameworks?
9. What administrative procedures are involved in the launch of public road works in your jurisdiction?

Section C: Funding and Implementation

10. What are the primary sources of funding for road infrastructure in Sangmelima?
11. Are there partnerships with international donors or private investors for road projects?
12. How is the management and allocation of these funds monitored at your level?

13. Are there challenges in fund disbursement or corruption in road project execution?

Section D: Socioeconomic Impacts

14. In your opinion, how has road infrastructure impacted the economic development of Sangmelima?
15. What measures are taken to ensure that new roads reach economically underprivileged zones?
16. How has the road network affected the rural-urban linkages in the subdivision?

Section E: Monitoring and Evaluation

17. What mechanisms are in place to ensure proper monitoring of road projects?
18. How does your office evaluate the success or failure of road development initiatives?
19. What are the major administrative challenges faced in sustaining these projects?

Section F: Perspectives and Recommendations

20. What recommendations would you propose to improve road infrastructure governance and impact in Sangmelima?

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INTERVIEW GUIDE FOR THE MAYOR OF SANGMELIMA

Topic: THE INFLUENCE OF THE CAMEROON-CONGO ROAD INFRASTRUCTURE ON THE SOCIO-ECONOMIC DEVELOPMENT OF SANGMELIMA TOWN

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

Researcher: **KINGSLY MELO N.**

Academic Year: 2023/2024

Section A: General Information

1. Name of Respondent:
2. Municipality:
3. Number of years in office:
4. Political affiliation (optional):

Section B: Municipal Role in Infrastructure

5. What is the role of the Sangmelima Council in road construction and maintenance?
6. Does the council have a local development plan that includes roads and transport?
7. Which municipal services are directly involved in executing road projects?
8. What challenges does the council face in terms of technical capacity or human resources?

Section C: Community Engagement and Development

9. How are local populations involved in road project planning and follow-up?
10. Are there public consultations before major works begin?
11. Have road projects contributed to local employment or economic activities?
12. Which roads have been prioritized in recent years, and why?

Section D: Financing and Budgeting

13. What is the municipal budget allocated for roads annually?
14. Are you satisfied with the support from the central government regarding road funds?

15. Have you accessed external funding (e.g., PNDP, FEICOM, donors) for any road projects?
16. Are there any public-private partnerships in the road sector?

Section E: Impact and Governance

17. What impact have recent road developments had on transportation, trade, and urban mobility?
18. How do you ensure transparency in project execution and contract awarding?
19. Are there audit reports or citizen feedback systems in place for infrastructure projects?

Section F: Future Prospects

20. What are your main priorities for future road development in Sangmelima?
21. What recommendations do you have for improving municipal capacity in road infrastructure planning and execution?

What are your perspectives for the road infrastructure?

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DEPARTEMENT DE GEOGRAPHIE

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ATTESTATION DE RECHERCHE

Je soussigné, Pr. PAUL TCHAWA

Chef du Département de Géographie, atteste que

Monsieur: KINGSLY MELO NGANKEPEH

Matricule: 18E454

Est inscrit(e) au cycle de : MASTER (2022-2023).

Spécialité : Marginalité, Stratégie de Développement et Mondialisation.

Et prépare une thèse sur le sujet : THE INFLUENCE OF THE CAMEROON – CONGO (KETTA-DJOUM) ROAD CONSTRUCTION TO THE SOCIO-ECONOMIC DEVELOPMENT OF SANGMELIMA TOWN.

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

10.5 JUL 2023

Fait à Yaoundé le.....



REPUBLIQUE DU CAMEROUN
Paix – Travail – Patrie

REGION DU SUD

DEPARTEMENT DE DJA ET LOBO

ARRONDISSEMENT DE SANGMELIMA

SOUS-PREFECTURE DE SANGMELIMA

BUREAU D'APPUI AU DEVELOPPEMENT LOCAL



REPUBLIC OF CAMEROON
Peace – Work – Fatherland

SOUTH REGION

DJA AND LOBO DIVISION

SANGMELIMA SUBDIVISION

SANGMELIMA SUBDIVISIONAL OFFICE

LOCAL DEVELOPMENT SUPPORT OFFICE

N° 02 /AD/L01/03/BADL

AUTORISATION DE RECHERCHE

Le Sous-Préfet de l'Arrondissement de Sangmelima soussigné, autorise **Monsieur KINGSLY MELO NGANKEPEH**, Matricule **18E454**, Etudiant en Cycle de Master, à la faculté des Arts, Lettres et Sciences Humaines de l'Université de Yaoundé I, Spécialité : Marginalité, Stratégie de Développement et Mondialisation à mener des recherches auprès des populations cibles, en vue de la rédaction de sa thèse sur le thème : « **L'influence de la construction de la route Cameroun-Congo sur le développement socio-économique de la Ville de Sangmelima** ».

Vous voudrez bien lui apporter l'encadrement nécessaire pour la réussite de ses travaux, notamment par la sensibilisation et l'adhésion de vos populations respectives.

Sangmelima, le 22 JAN 2024



LE SOUS-PREFET
et par Délégation,
L'ADJOINT

Bilounga Jean
Secrétaire d'Administration

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