

Dimensional Analysis of Spatial Inequality in Regional Development: Evidence from the Noun Division, West Region of Cameroon

Desmond Forbah Tafuh

Department of Geography and Planning, The University of Bamenda

P.O. Box 39, Bamenda, Cameroon

E-mail: tafuhdesmond19@gmail.com

Sunday Shende Kometa

Department of Geography and Planning, The University of Bamenda

P.O. Box 39, Bamenda, Cameroon

E-mail: shendek@hotmail.com

Jude Ndzifon Kimengsi

Department of Geography and Planning, The University of Bamenda

P.O. Box 39, Bamenda, Cameroon

E-mail: kimengsi.jude@uniba.cm

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Abstract

Spatial inequalities in regional development continue to exist on a global, regional, national, and local scale. The nature and magnitude of spatial inequality in regional development seems not to have been clarified in the Noun Division even though much interest appears to be given only to income inequality despite the fact that spatial inequality in socio-economic development seemingly exist. This paper provides empirical evidence on the dimensions of spatial inequality in regional development in the Noun Division. The situation is examine using simple random sampling technique to select 400 household representatives with the

used of questionnaires as the main instrument for data collection. Data collected were analysis using descriptive and inferential statistics in Microsoft Excel 2016 and SPSS₂₁. Dimensional analysis confirms that there exists spatial inequality in regional development with Fouban and Foubot Sub Divisions rapidly developing in the Noun Division. The study concluded that there exist spatial inequality in regional development between Sub Divisions in the Noun. Based on this finding, it is recommended that the way forward to balance the imbalance between Sub Divisions is to target investments in lagging Sub Divisions taking into consideration variation the distribution of socio-economic development in the Noun Division.

Keywords: Nature, Magnitude, Spatial Inequality, Regional Development

1. Introduction

1.1 Background

Regional planning and development are not only alive at multiple scales but remains popular as long as development is unbalanced in the World (Dutt *et al.*, 2020). Each region is unique and differs from the other by the level of economic development, living standards of its inhabitants, unemployment rate and employment possibilities (Rentkov á 2017). Inclusive regional development remains critical in tackling current global development challenges especially spatial inequality in development (Nghah, 2015). Similarly, Spatial inequalities are high with disparities between rural and urban areas, and this is because of uneven impact of trade openness and globalization (Kanbur & Venables, 2005). The debate on regional planning that becomes a crucial topic in the last two to three decades has also been linked to regional disparities. These debates were in two perspectives that is applied and academic. From an applied perspective, it is an issue of political priority in most regional integration schemes while from an academic perspective, the studies on regional disparities and, of regional convergence are an indirect way of testing the validity of different and competing theories of economic growth (Villaverde & Maza, 2009). As the debate on regional development widens, so too has the debate over which techniques are suitable to measure regional disparities. The debate on regional disparities continues to hold a significant attraction in science and policy spheres due to rising disparities in trade and economic growth at the global and regional scale (Sébastien & Richard, 2016). Domenica & Paolo, (2019) reveals that traditional inequality measures have failed to capture the geographical distribution of income. The failure to consider such distribution implies that, holding income constant, different spatial patterns provide the same spatial inequality measures made up of social and economic inequality that need to be balanced in the process of regional development. The indicators of these spatial inequality are visible in the supply of basic infrastructures or needs that includes schools, hospitals, potable water supply and electricity supply while sub indicators of productive infrastructures include road development, road maintenance, agricultural infrastructures, market development and the development of tourism.

In the Advanced Developed countries in Europe and North America, regional disparities have gradually been on a rise since the late 1980s especially when it comes to health, college-educated workers and unemployment rates (Bludorn *et al.*, 2019). The situation in

Africa shows that the unequal distribution of household wealth and residence status play critical roles in driving socio-economic inequalities especially in child food insecurity and malnutrition in Africa (Akim *et al.*, 2020). In Sub Saharan Africa, regional development has been unbalanced due to push factors like conflict and poverty as well as pull factors such as better educational opportunities and high urban wages (Jedwab *et al.*, 2015). However, in the past few decades' rural to urban transition has dramatically accelerated and the region by many estimates is now urbanizing at a fastest rate (Saghir & Santoro, 2018). To manage this unprecedented shift, the distinction or spatial inequality between rural and urban development is often a useful policy making tool. Economic variation occurs for two major reasons which include the fact that regional disparities govern many (but not all) patterns of development which have taken place in the past or taking place now as it also stimulates political actions that are link to development (Morgan,1982). In Cameroon, spatial variations in the level of socio-economic development seemingly exist but in the case of the Noun Division much interest appears to be given only to income inequality with some Sub Divisions developing rapidly. The negligence of other dimensions of spatial inequality in the process of regional development seems to be contributing to high rate of spatial inequality in socio-economic development in the region. Again, regional inequality seems to be a legacy of colonial history which contributes to increase developmental gap between the colonial townships of Fouban and Foubot (fast developing regions) and rural areas such as Massagam, Malantouen and Bangourain (slow developing regions). However, this paper seeks to examine the nature and magnitude of spatial inequality in socio-economic development in the Noun Division.

1.2 Study Area, Materials and Method

The region is located between latitude 5°45' and North of the equator and between longitude 10°55' and East of the Greenwich Meridian. The Noun Division formerly called Bamoum Country in the 1980s covers a surface area of about 7,787km² in the West Region of Cameroon and shares its borders with Mayo Banyo Division (Adamawa region) and Donga Mantung Division (North West region) in the North, Bui and Ngoketunja Division (North West Region), Bamboutos, Mifi and Khoug-khi Division (West Region) to the West, Mbam and Nkim Division (Center Region) and Ndé Division (West Region) in the East and South (Figure 1). The area covers nine (9) Sub Division which includes Bangourain, Fouban, Foubot, Kouoptamo, Koutaba, Magba, Malantouen, Massagam and Njimom. These areas are made up of rural and urban areas with villages which are considered as the smallest administrative units. The region is dominated by a single culture throughout the 9 Sub Divisions, and this gives it a strong attribute of a formal region. The study made use of quantitative and qualitative research design which helps to give an in-depth evaluation of spatial inequality in regional development using primary and secondary research methods. The simple random sampling techniques was used to select 400 household representatives involved in the study. The researcher used this technique to avoid being biased and because according to Tanah (2012), it is the best and most reliable way to compose a sample given that the attributes of the sample are guaranteed in the population from which it was drawn. The main instrument used for data collection was questionnaires in which a total of four hundred (400) questionnaires were administered to household representatives in Sub

Divisions that make up the Noun Division. These household representatives were made up of elderly people in the Compound.

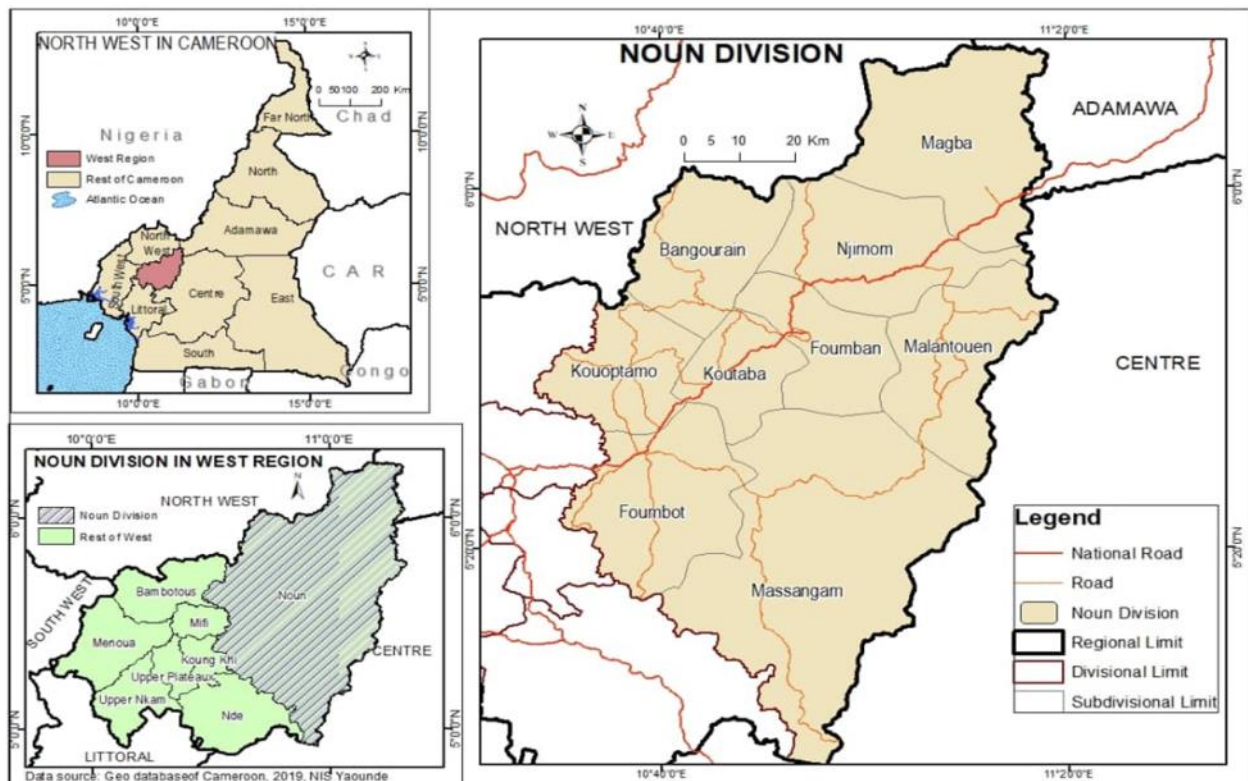


Figure 1. Location of the Noun Division in the West Region of Cameroon

The data was analysed descriptively using Microsoft Excel 2010 and statistical package for social sciences version 21 (SPSS21). The probability that exists between one independent variable (regional development) and a single dependent variable (spatial regional inequality) was evaluated through this technique.

2. Results

The dimensions used to examine spatial inequality in regional development include agricultural productivity and development, education, health, income and poverty rate, transportation, housing, electricity supply, potable water supply, market development as well as the development of tourism. These dimensions of spatial inequality in regional development can be measured using leading, emerging, and lagging areas (Kimengsi, 2010).

2.1 Spatial Inequality in Agricultural Development and Production in the Noun Division

Agriculture is the main economic activity in which the population of Noun Division relies on for their livelihood. In this Division, both food crops and cash crops are being cultivated. Major cash crops cultivated are Robusta coffee, Arabica coffee, cocoa and palm oil nuts which are unequally distributed in the Noun Division.

From the quantity of Robusta Coffee cultivated, 60% is cultivated in Malantouen, Massangam

and Magba and are considered as leading Sub Divisions while 32% are cultivated in Koutaba, Foubot, Bangourain and Kouoptamo as well as 8% in Fouban and Njimom and are considered as lagging Sub Division. For the quantity of Arabica coffee cultivated, 60% is cultivated in Koutaba, Foubot, Bangourain and Kouoptamo which are also known as rapidly developing sub divisions in the production of Arabica coffee in the Noun Division. Magba, Malantouen and Massagam that account for 35% are fast developing sub divisions while Fouban and Njimom are slow developed sub divisions in the production of Arabica coffee. In the production of palm oil, 60% is produce in Malantouen and Massagam while 30% are produce in Magba, Koutaba and Fouban. Slow developing sub divisions such as Kouoptamo, Foubot, Bangourain and Njimom account for 10% of palm oil production in the Noun Division.

The major basins (Ngoudoup, Mvi, Foyet Fosset, Fossang, Mawoung and Fousap) where agricultural activities are being practiced are also unequally distributed and it greatly contributes to spatial inequality in food crop cultivation in the region. Food crops cultivated include cereals, leguminous crops, fruits and vegetables as well as root crops and tubers. These food crops are not cultivated in the same magnitude across the Noun Division. Spatial differences in the magnitude of crop production have made some areas to advance more in food crop production than others. The unequal distribution of fertile soils in addition to human assets such as capital, labour and technology have made some areas to be more productive and these areas include Foubot, Malantouen and Kouoptamo. Some areas such as Njimom, Fouban and Magba are poor in crop cultivation since the area is characterised with unfertile soils that does not favour crop production.

In Foubot Sub Division, the main food crop produced are cereals which include maize cultivated by 11,903 farmers in two cycles per year while other cereals such as beans are also cultivated in one crop cycle per year by 10,713 farmers (MINADER Noun, 2021). Despite the leading position of Kouoptamo Sub Division in crop cultivation, yields obtained are far below the potentials of the land if modern techniques are fully applied. The unequal distribution of agricultural productive basins contributes to spatial inequality in the development of the agricultural sector in the Noun Division. The magnitude of spatial inequality in crop production show that Foubot and Malantouen are rapidly developing in crop production. Field findings show that Foubot is the main breadbasket of the region with high rate of agricultural development in addition to it fertile dark volcanic soils. Livestock production is an integral part of the population of Koutaba Sub Division. Koutaba is the highest producer of poultry products with 30,000 heard of poultry, 7843 head of cattle, 14408 head of goats, 10319 head of sheep and 121 head of pigs.. The population of Foubot and Bangourain Sub Division are also involved in livestock production especially in poultry farming and cattle rearing. Figure 2 shows spatial disparities in the quantity of livestock's produce across the Noun Division.

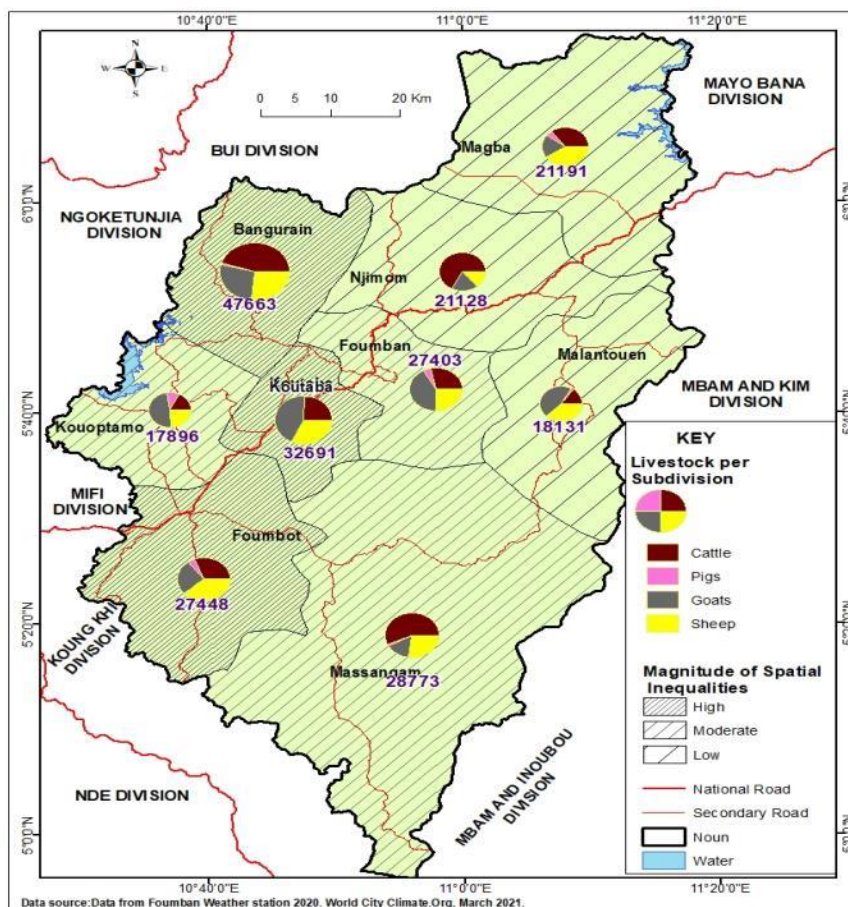


Figure 2. Spatial disparities in the quantity of livestock’s produce in the Noun Division

Source: MINEPIA Noun, (2022)

Excluding farmyard birds, the population of Bangourain sub division are also in livestock production with about 21504 head of cattle, 12910 head of goats, 12687 head of sheep and 562 head of pigs. Massagam, Foumbot and Foumban Sub Divisions are also being describe as a land of livestock production that includes cattle rearing with an estimated herd size of 16325, 8466 and 7840 heads of cattle respectively. These cattle’s are used either for meat or for milk (“Kossam”) which is extracted in an artisanal way and sold locally in the markets. The poultry sector also occupies an important place in Foumbot sub division. Pig farming is also practiced in the locality but on a very small scale due to the religious practices of the inhabitants.

Field findings show that Kouoptamo, Massagam and Foumban sub division are emerging in livestock production especially in cattle rearing and poultry farming while Njimom, Malantouen and Magba are still lagging. Fieldwork also reveals that spatial inequality exist in fish production from artisanal fishing and aquaculture that are unevenly distributed across the Noun Division. Fishing is the second economic activity after the cultivation of crops in the Noun Division. The unequal location of these fishing activities due to inequality in the

distribution of inland water resources triggers rapid inequality in these activities across the Noun Division. Magba and Bangourain has the largest resources of inland water fisheries, and the Sub Division is drained by many rivers apart from the Mape and Bamendjin dam respectively. Bangourain, Magba and Kouoptamo sub divisions are rapidly developing in fish production, and it is an essential artisanal activity in the Community. In Foubot, Kouataba and Njimom fish production is fast developing but remains slow in Malantouen, Massagam and Fouban. The nature and magnitude of spatial inequality in agricultural production clearly shows how some Sub divisions are rich in agricultural productive assets that influence the practice of modern and semi modern techniques of crop and animal production in the Noun Division.

2.2 Poverty Level as an Indicator of Spatial Inequality in Regional Development in Noun Division

The level of poverty and spatial inequality are assessed based on living conditions in the Noun Division. Spatial inequality in the distribution of educational and health services, potable water and electricity supply, housing and road development reflect the rate of spatial inequality in the living conditions of household in the Division. Poverty is not only measured in terms of income but also in terms of self-esteem, access to health care and educational services. There is high level of spatial inequality in access to these necessities especially in the distribution of educational and health facilities (Table 1).

Findings reveals that it remains very common to see schools which were officially created more than 5 years ago without a single classroom, toilet and other school equipments. This is the case with Government Primary School Mambonko-Bord in Magba Sub Division which was created since 2017 with no School infrastructures. The area is also characterised with spatial inequality in the distribution of Medical Doctors. Taking World Health Organization standard of doctor patient ratio of 1:1000 (WHO, 2021), all the sub divisions still lack the required number of medical doctors (Table 2). Fouban is the only sub division having the required number of medical doctors with 7 Doctors even though the doctor patient ratio remains below the prescribe standard of WHO.

Table 1. Spatial distribution in access to educational and health facilities in the Noun Division

Sub Divisions	Primary and Secondary schools' distribution			Distribution of health care Institutions	
	Total number of Nursery School	Total number of Primary School	Total number of secondary and high schools	Total number of Public hospital	Total number of Private hospitals
Fouban	88	137	26	18	19
Koutaba	39	63	11	19	3
Foubot	38	74	21	2	2
Kouoptamo	16	53	8	14	7
Bangourain	14	45	9	14	/
Magba	10	54	7	13	2
Malantouen	9	86	13	18	5
Massagam	7	60	10	13	4
Njimom	6	56	8	1	/
Total	227	628	113	112	42

Source: MINEDUB, MINESEC Noun & Fieldwork, 2022

Some of the sub divisions such as Koutaba, Malantouen, Bangourain, Massagam and Foubot are witnessing fast increase in the number of medical doctors. However, spatial distribution of public and private hospitals as well as doctor patient ratio determines the nature and magnitude of spatial inequality in the Noun Division.

Table 2. Spatial distribution of public hospitals and doctor patient ratio in the Noun Division

Sub Divisions	Numbers of Doctors	No of Patients in 2021	Doctor-patient ratio
Koutaba	2	8754	1:4377
Foumban	7	23297	1:3328
Malantouen	2	6024	1:3012
Bangourain	2	5178	1:2589
Kouoptamo	1	4834	1:4834
Massagam	2	6047	1:3023
Magba	1	5125	1:5125
Foubot	3	10862	1:3620
Njimom	1	3796	1:3796
Total	21	73917	1:3520

Source MINEPAT & MINSANTE, (2021) & Fieldwork, (2022)

The main mode of transportation across the Noun Division is road and the spatial distribution of this infrastructure shows a high rate of inequality. The most salient symbols of regional development and improvement in rural areas of the region are road infrastructures which are unevenly distributed. All the National roads in the Noun Division are tarred and passes through five (5) Sub Divisions namely Foubot, Koutaba, Foumban, Njimom and Magba. Figure 3 shows the nature of regional road development in the Noun Division. The nature and magnitude of spatial inequality in road development shows that apart from Kouoptamo sub division, all the other sub divisions (Massagam, Bangourain and Massagam) which are not directly link to National Road number 6 are less developed in terms of road infrastructures.

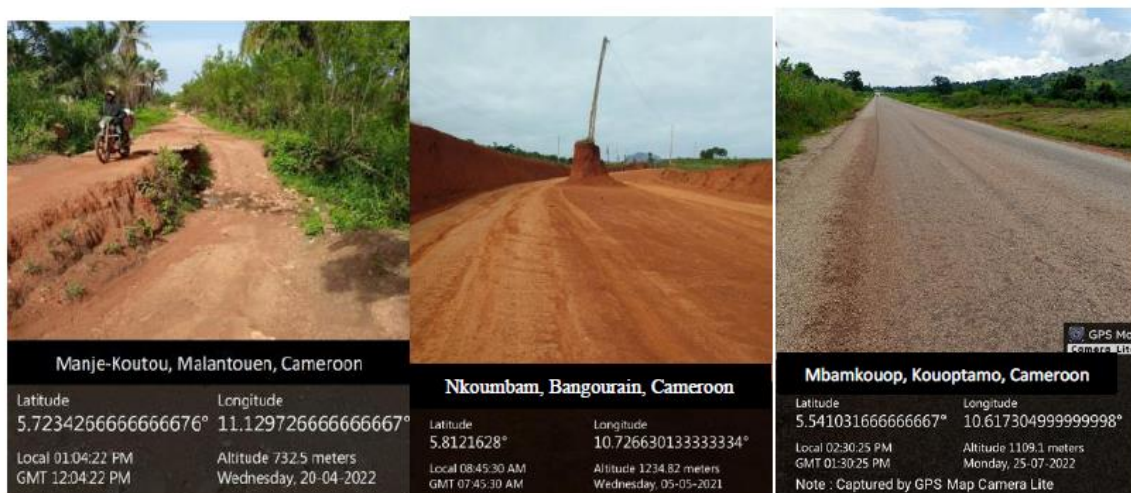


Figure 3. Nature of regional road development in the Noun Division

Source: Fieldwork, (2021/2022)

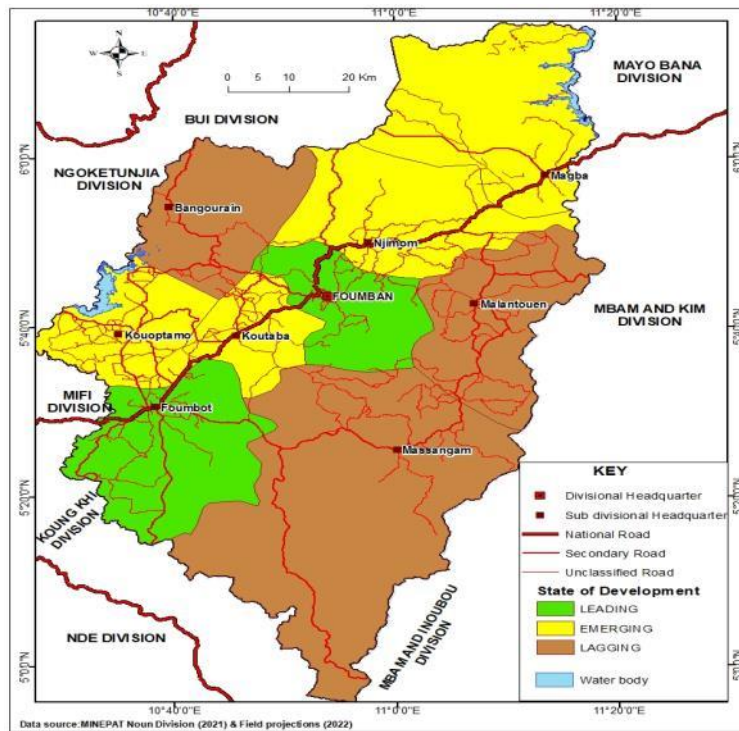


Figure 4. Nature and magnitude of spatial regional distribution of roads development in the Noun Division

Source: MINEPAT & MINPT Noun, (2021) & Fieldwork, (2022)

Results shows that Fouban Sub Division has 17.4km of paved roads in the urban space even though some patches are completely degraded. The Sub Division has 280.4km of unpaved road in rural areas. Foubot Sub Division has 240km of road in which only 24 km are paved. Koutaba has more than 208 km of road but only the section that crossed the national road N 6 that is about 20km is tarred. Massagam and Malantouen Sub Divisions have only rural roads that are mostly seasonal roads and dusty during the dry season making visibility difficult for vehicles to circulate freely. During the rainy seasons, these roads are muddy with potholes that make transportation of good and services difficult. The situation of regional roads in Malantouen which is one of the main bread baskets in terms of food and cash crop supply remains deplorable as compared to other Sub Divisions.

Water is a source of life and a crucial development indicator as it is directly link to human health. Spatial inequalities exist in the distribution of potable water sources across the Noun Division. Only Fouban Urban and Foubot Urban have access to treated potable water source of Cameroon Water Utilities Corporation (CAMWATER). The remaining Sub Divisions relies mainly on bore holes and springs as their main source of potable water which is often not treated.

Fouban Sub Division has fifty-seven (57) boreholes that are relatively small in diameter and equipped with a hand-powered pump in which twenty-five (25) are in good condition, six (6) damaged and twenty six (26) to be rehabilitated. The Sub Division also have twenty-nine

(29) wells drilled by hand with relatively large diameter and equipped with hand pumps, seven (7) of which are in good condition, fourteen (14) damaged and eight (8) to be rehabilitated. Fouban Sub Division also has thirteen (13) developed springs in which seven (7) are in good condition and six (6) to be rehabilitated. In Foubot CAMWATER supplies part of the urban area and has on thousand five hundred and twenty-one (1,521) connections for one thousand one hundred and eighty-four (1,184) subscribers. Apart from CAMWATER, other sources of household water supply include wells in Njimbot I and II, Mangoum, Fosset, Compagny, Nkoundoumbain, Momo, Tendjouonoun, Soupken, Mbanjou, Mbantou and Mahouon. Koutaba is supplied by SCANWATER station with four (4) standpipes and more than one hundred (100) private connections which supplies the urban space managed by a private enterprise. This Sub Division also have public and private boreholes and wells with hand pumps that supply households. SCANWATER station is also found in Massagam and a tank of 14 m³ that supply households in the area in addition to boreholes and wells. Figure 5 shows spatial distribution in the development and supply of potable water in the Noun Division.

Sub Divisions experiencing slow development in terms of household potable water supply includes Magba, Kouoptamo and Bangourain. Magba Drinking Water Supply Management Authority (AGEPOM) is the main source of household water supply in Magba. Magba also has boreholes that are used as household potable water sources. Some sub divisions such as Kouoptamo and Bangourain relies only on boreholes, and natural springs for household potable water supply. The Sub Division also relies on natural springs for the supply of household which often experience shortages during the dry season. Bangourain Sub Division has significant ground water table but still experiencing slow development in terms of potable water supply.

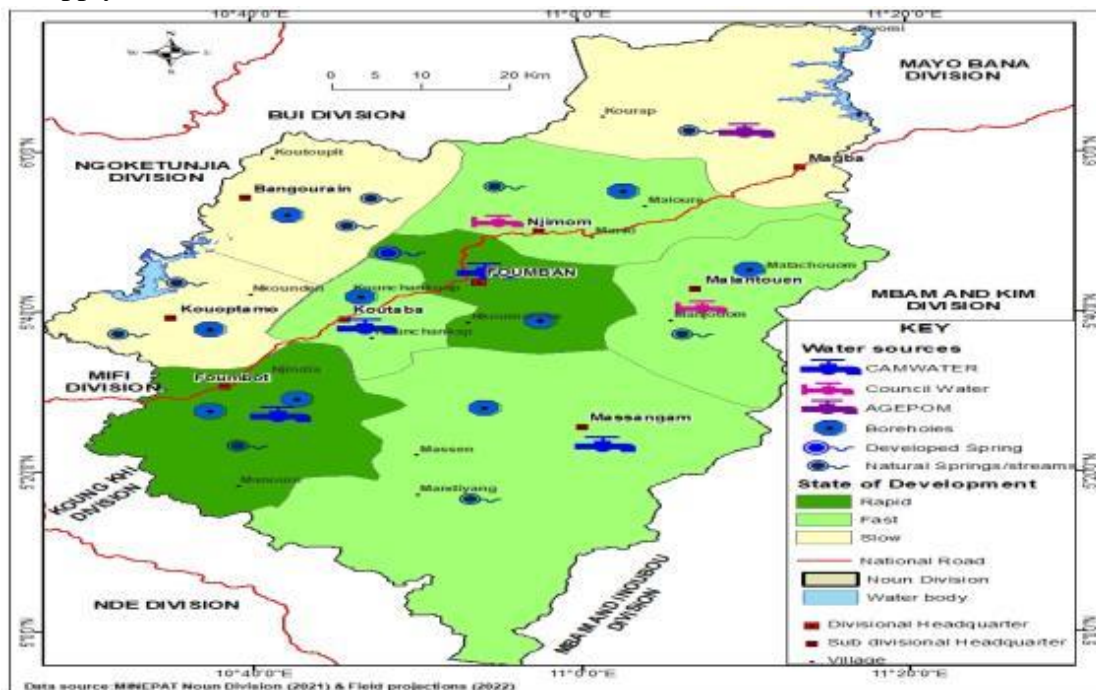


Figure 5. Spatial Distribution in the development and supply of potable water in the Noun Division

The Sub Division has few wells, several natural springs and few streams. Figure 6 shows the nature and sources of household potable water supply in some localities in the Noun Division.



Figure 6. The nature and sources of household potable water supply in some localities in the Noun Division

Source: Fieldwork, (2022) & Linjouom, (2018)

Figure 6 shows that in some villages like Kouhouat, the main source of household potable water is a stream while in Matta Barrage in Magba Sub Division, the main source of household potable water is a hand pump borehole. In some areas such as Kouhouate in Bangourain Sub Division, a ditch at the bank of the Bamendjin reservoir is also being used as a source of domestic water supply. The SCANWATER that is found in Bangourain supplies only Administrative personnels. Spatial inequality does not only exist with treated and untreated water sources but also the distance covered to fetch water in the Noun Division. According to World Health Organization standard, a community is water stressed if it covers more than 200m to get potable water (WHO, 2012). Findings reveal that going by this standard almost all the nine Sub Divisions except some areas in Fouban urban and Foubot urban suffer from water stress situation especially during the dry season. Some of the household in the Noun Divisions also use treated electrified boreholes.

The main source of electricity supply in the Noun Division is ENEO (Energy of Cameroon) and the issue of electrification remains challenging within the nine sub divisions. Spatial inequality in the supply of ENEO electricity network is determined based on the number of villages supplied with electricity in each of the Sub divisions. The divisions with highest supply of electricity are Fouban, Foubot, Koutaba and Magba. Bangourain, Malantouen, Massagam, Kouoptamo and Njimom these agencies are not made available. Fouban has 40 functional transformer stations that supplies 25 villages out of 33 villages in the area. Koutaba Sub Division has 64.85 kw of medium voltage linear and 96.5 kw of low voltage linear with 33 transformers. However, the rate of spatial distribution in the frequency of

electricity supply between rural and urban areas continue to increase in the Noun Division.

International human rights law recognizes everyone's right to an adequate standard of living, including adequate housing (UNHABITAT, 2021). Despite the central place of this right within the global legal system, over a billion people are not adequately housed. This region is characterised with standard, sub-standard and poor standard houses that are found in it Urban and Rural areas. Field investigations show that high rates of housing inequality are attributed to the cost and availability of materials used for the construction of houses in the Noun Division. In the Noun Division, modern houses or standard houses are made up of houses constructed with good ventilations, flexible space, good kitchen and toilet system, good drainage system, good water systems and good electricity systems. Field analysis shows that these modern houses are mostly found in administrative areas of Foumban and Foubot which are well planned. The analysis shows that the size of a household can easily determine room density than the nature of housing standard in the Noun Division. The international standard approved by the UN-HABITAT shows that room density of one (1) is low while two to three (2-3) is medium or moderate as well as four (4⁺) and above is high (UN-HABITAT, 2016 cited in Ahfembombi, 2022). Fieldwork shows that household sizes are large with sub divisions such as Foumban and Foubot having a high household size and numbers of rooms in the Noun Division. The room sizes are large and up to standard with small household size and room density not more than three (3) in the Noun Division (Table 3).

Table 3. Nature of household sizes and spatial variation of room density in the Noun Division

Sub Divisions	Household size				Total Household size	Number of Sleeping rooms				Total Number of sleeping room	Room density
	1-5	6-10	11-15	15 ⁺		1-3	4-6	7-9	10 ⁺		
Foumban	3	19	29	28	1033	13	36	11	19	503	2
Foubot	2	12	16	23	713	15	16	13	9	313	2
Koutaba	1	11	13	16	543	17	12	8	4	202	3
Magba	2	8	14	9	413	13	11	5	3	154	3
Kouoptamo	5	4	12	15	462	9	18	4	5	249	2
Malantouen	3	8	9	13	419	13	12	6	3	167	3
Massagam	4	9	13	5	347	9	11	7	4	173	2
Bangourain	5	4	7	11	329	6	12	4	5	159	2
Njimom	3	6	3	9	255	5	8	5	3	123	2
Total	28	81	116	129	4514	100	136	63	55	2043	2

Source: MINHDU & Fieldwork, (2022)

Table 3 shows that room density in the urban area of Foumban and Foubot are high in the Noun Division. This is because every male child wants to construct a house around his father's compound to gain successorship according to the custom of the Bamoum people. Most of the people lives overcrowded and informal settlements with high room density of more than three (3). Semi modern houses are mostly constructed horizontally but not well planned. These houses have no aesthetic, large room sizes with larger household sizes and room density of more than three (3). Semi-modern houses are mostly found in Koutaba, Magba and Njimom. Foumban and Foubot sub divisions are experiencing rapid housing development followed by Koutaba, Magba and Njimom in that order. The least sub divisions

experiencing slow housing development are Kouoptamo, Bangourain, Malantouen and Massagam. These areas are characterised by poor standard houses made up of local houses constructed with no foundations using mud blocks.

In summary, therefore most of the houses (60%) are substandard while 20% are made up of old and depreciated houses in the Noun Division. In urban areas, these poor standard houses are found around slums and wetlands. The houses are made up of large household with room density of more than three (3). They are characterised with poor toilet systems and the population are exposed to illnesses such as diarrhoea, cholera, schistosomiasis, and trachoma. These substandard houses are also found in rural areas but in a clean environment and are not exposed to illnesses. The distribution of educational and health care facilities, electricity and potable water supply as well as housing and road development determines the rate of development and population living standard in the Noun Division. Some Sub Divisions such as Fouban and Foubot are relatively wealthy when compared with Magba, Bangourain, Malantouen and Massagam with relatively the lowest share of well-paid jobs and provision of basic services. This contributes to poor housing and health facilities, high rate of school dropout as well as reduction in employment opportunities. However, this shows that poverty incidence and reduction of income inequality remains unattainable as the gap between the rich and the poor continues to widen as prices of agricultural produces continue to fall in the Noun Division. More than 80% of household in the Noun Division relies on agriculture as a source of livelihood sustenance. These household outputs from the sale of agricultural produces do not reflect their input.

2.3 Spatial Regional Inequality in the Development of Markets in the Noun Division

The Noun Division is blessed with different types of markets that are rich in various marketable products ranging from agricultural products to basic commodities. These markets weekly markets where livestock, fish and fruits are sold. Foubot and Fouban which acts as the economic and administrative capital of the Noun Division have many more markets. Foubot is considered as the economic capital of the Noun Division based on the role it plays in the supply of goods to the other sub divisions. The closeness of Foubot to the regional capital of the West region Bafoussam in addition to paved National Road number 6 linking the two towns facilitate movement of goods from the centre markets in Bafoussam to Foubot. These goods are mostly manufactured products such as chemicals, paper, textiles, machinery, clothing and household needs. Spatial inequality in the distribution of fruits markets also exist with the largest fruit market found in Foubot. These fruits and vegetables are transported nationally to other urban cities of Cameroon such as Yaounde, Bafoussam and Douala and Internationally to Gabon, Nigeria and Equatorial Guinea.

The main market for livestock is the “a betail” Market in Fouban made up of different sections with regards to the different types of livestock. In this market, live animals are marketed for consumption. Previously, the largest livestock market reported by Regional Diagnosis of the West Region, (2021) was the Tayandi market. This change in the leading market for livestock’s is due to increase in conflict between Koutaba Council and Sub Divisional Delegation of MINEPIA over the control of Tayandi Market with the coming of

complete decentralisation that delegate powers to the Council. Spatial regional inequality also exists in terms of the distribution of fish markets across the Noun Division. The main market for fish in the Noun Division is Magba fish market where both catfish and tilapia are being sold. These fish are being distributed in different forms that is fresh and smoked fish. The smoked fish are transported to other regions and are being sold in major cities such as Bamenda, Bafoussam, Douala and Yaounde. Generally, these products in addition to other basic commodities such as oil, canned tomato, rice, salt and maggi are sold in some markets found across the Noun Division. Bangourain sub division has the second largest market of fish though with few markets.

2.4 Spatial Inequality in the Development of Tourism in the Noun Division

Tourism is one of the greatest agents for development but is unevenly distributed among the 9 Sub divisions in the Noun Division. Spatial inequality in the development of tourism has made this economic activity to be highly concentrated in Fouban Sub Division. The Palace of Bamoun king in addition to the royal museums constitutes the epicentre of tourism in the Noun Division. This Sub Division also has an eco-touristic site at Mount Mbappitt which has been developed by the Ministry of Tourism and Leisure (MINTOUR). The Sub Division has an additional museum and one craft centre as well as other touristic sites that are not yet developed. Other sub divisions with touristic potentials includes Foubot, Koutaba, Njimom and Magba. Njimom even though still not developed, have specialized touristic sites which makes it a good site for tourism. These touristic sites include the Seven Stones site in Mankah, caves (Foyet, Mambouo, Maloure) and the Mayap Palace in Maghait. Magba also has a rich touristic potential that includes the fall of Kiegouo, sacred forests, trenches used as a strategy of war, caves and the chocolate-box beaches of Mapé. The development of tourism remains very embryonic in the municipality of Koutaba even though the sub division is rich in touristic potentials. These touristic potentials in Koutaba include Mounts Mbappit, Mount Kogham and the green hills of wouomvouegnam. Figure 7 shows some touristic sites in the Noun Division, West Region of Cameroon.

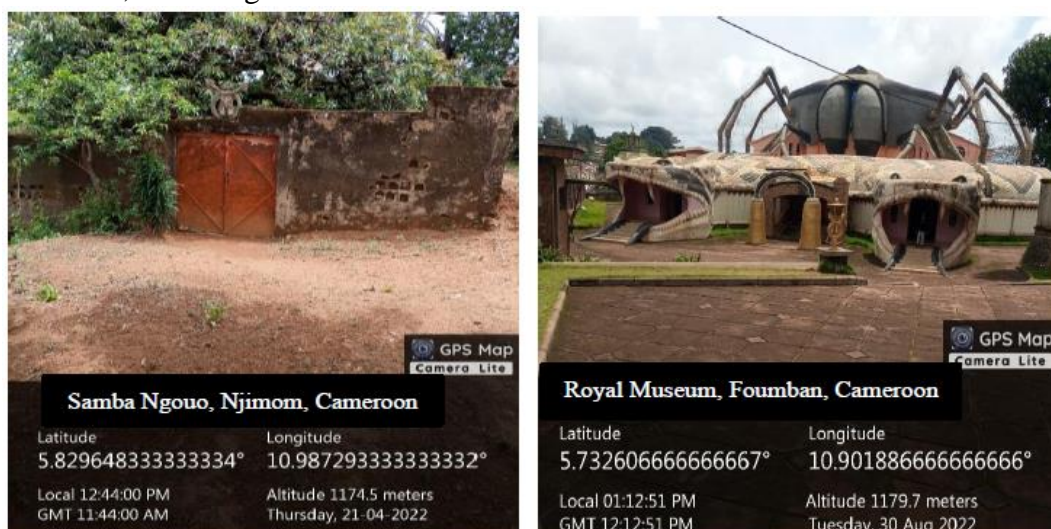


Figure 7. Some touristic sites in the Noun Division, West region of Cameroon

Source: Fieldwork, (2022)

Foumbot is also a real touristic stronghold, and its touristic potentials consist of attractive landscapes, lakes, waterfall in Mbanjou, caves and sacred forests. These touristic potentials do not have an established tourist circuit and access roads to touristic sites in the Noun Division. The touristic potentials in Kouoptamo includes Lake Ngouendam, Lake Sanka-Ndoumkain, Lake Petponoun, Lake Monoun and Lake Njindoun as well as some hill topography such as Mount Kogham. The sub division also has a good poultry farm, (Kounden poultry farm) which is a good touristic attraction that if well-developed could bring more tourist in the area. Malantouen sub division is lagging in the development of tourism even though the area has significant touristic potentials. Similarly, Massagam Sub Division is lagging in the development of tourism but also have good touristic potentials that if developed can attract the attention of visitors. The potentials in Massagam sub division includes Lake Klouy ân, the caves of Njifoumbouo, Rocher l ên, Mfekpan, Njimelouo and Njissangam. The absence of tarred road in the sub division is a major handicap for the development of tourism. Bangourain has the least touristic potentials, and this activity is poorly developed.

3. Dimensional Analysis of Spatial Inequality in Regional Developments

Field analysis shows that the nature and magnitude of spatial inequality in regional development varies from one dimension to another in the Noun Division. This shows variation in regional development among the nine (9) sub division that make up the Noun Division of Cameroon. The nature of spatial inequality shows that Foumban is rapidly developing in all the dimensions of regional development except agricultural productivity. Foumbot sub division is rapidly and fast developing in all the dimensions of region development except in the distribution of health services. Table 4 shows dimensional analysis of the nature of spatial inequality in regional development in the Noun Division and figure 9 shows the magnitude of spatial inequality in regional development in the Noun Division.

Table 4. Dimensional analysis of the nature of spatial inequality in regional development in the Noun Division

Sub Divisions	Educational Services (%)	Health services (%)	Potable water supply (%)	Electricity supply (%)	Housing development (%)	Road development (%)	Agricultural development (%)	Development of tourism (%)	Markets developed (%)	Poverty and epths (%)
Massagam	7	11	11	6	3	5	10	5	4	7
Bangourain	7	9	2	5	5	7	15	4	7	6
Foumban	28	24	25	24	27	20	5	27	20	25
Foumbot	16	2	21	20	22	19	17	15	26	17
Kouoptamo	7	14	4	8	6	10	15	7	10	8
Koutaba	13	14	13	14	12	12	12	13	12	13
Magba	6	10	6	12	11	11	9	11	11	9
Malantouen	10	15	8	7	4	5	10	6	4	8
Njimom	6	1	10	4	10	11	7	12	6	7
Total	100	100	100	100	100	100	100	100	100	100

Source: Fieldwork, (2022)

Field results shows that despite the rapid and fast rate of development, poverty gap and living

standard within the sub divisions remains high. This high rate of inequality between the rich and the poor is attributed to unequal distribution of fertile agricultural land and high cost of agricultural land rented in the sub division. The high cost of land rented to farmers in addition to the high cost of other farm inputs does not reflect the output of most farmers. As a result, most of the population are unable to meet with the high cost of their basic needs that continue increase while the cost of their farm produce remains stagnant. This is like the situation in Koutaba sub division even though it has been experiencing fast development in all the dimensions of regional development. Magba and Kouoptamo sub division have also been experiencing fast rate of development in all the dimensions of regional development while other sub divisions like Bangourain, Malantouen, Massagam and Njimom have been experiencing slow development in most dimensions of regional development. The continues growth of Fouban and Foubot Sub divisions are not only due to their administrative and economic potentials respectively but due to their spatial interactions with other Sub Divisions in the Noun Division as well as other Divisions in the West Region and other Regions in Cameroon. The magnitude of spatial inequality in regional development shows that Fouban and Foubot Sub Divisions are leading in terms of all the dimensions of regional development by 22.5% and 17.5% respectively in the Noun Division. Emerging sub divisions experiencing fast regional development includes Koutaba with 12.8%, Magba with 9.6% and Kouoptamo with 8.9% in the Noun Division, West Region of Cameroon. Four sub divisions out of 9 are experiencing slow rate of regional development with 7.7% in Malantouen, 7.4% in Njimom, 6.9% in Massagam and 6.7% in Bangourain. These sub divisions are the most lagging areas in most dimensions of regional development in the Noun Division. Generally, these confirm that there exists spatial inequality in the nature and magnitude of regional development in the Noun Division, West Region of Cameroon.

4. Conclusion

Intensively, spatial inequality in regional development has fuel some Sub Divisions to be more developed than others in the Noun Division. There has been a shift in the measurement of inequality from monetary terms to the incorporation of other non-monetary terms such as development in agriculture, tourism, markets, roads and access to basic services (water, electricity, schools and hospitals). In Ghana the provision of access to schools, hospitals and other social services tend to favour the southern parts of the country influencing the spatial distribution of population and social development. This is not too different in the Noun Division as spatial inequality in socio-economic development turns to favour development in Fouban and Foubot which are the Leading Sub Divisions in the Noun. The nature and magnitude of spatial inequality in regional development is based on the quantity and quality of development in terms of economic, infrastructures and social facilities in the Noun Division. The rate of inequality between rapidly developed Sub Divisions (Fouban and Foubot) and slow developed Sub Divisions (Malantouen and Massagam) calls for the need of equity in the quality and quantity of development between the Sub Divisions in the Noun Division. Summarily, variation in regional development shows that some Sub Divisions are rapidly developing while others are developing fast as well as some are still experienced slow development in the Noun Division. There also exist spatial inequality in poverty gap and

living standard especially within the Sub Divisions. However, poverty reduction and inequality remains on the agenda of Cameroon regional planning policy (National Development strategic Plan of 2030), which is applied in the Noun Division.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Obtained.

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Data sharing statement

No additional data are available.

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