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**CONCEPTUALISATION AND DEFINITION OF  
DECENT LIVING STANDARDS IN CAMEROON  
RURAL COCOA-GROWING AREAS IN LINE WITH  
THE ANKER METHODOLOGY**

**REPORT**

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## **Executive summary**

Commissioned by JRC, the study aimed to identify the level of income that is required for Cameroonian cocoa farmers to lead a “decent life”, and more specifically define the concept of “nutritious diets”, ideal level of education and health and decent housing, in the Cameroonian context. To define and complete the conceptualization of a "decent life" in the context of the Cameroonian cocoa sector, we started from the definition of the cost of a basic but decent life in the cocoa growing regions of Cameroon knowing that from this definition, we would deduce that of the corresponding decent income. To that effect, we considered the following three dimensions: 1) food security, nutrition, and health; 2) socio-economic and equity; 3) environmental sustainability. Several sources of data, mainly qualitative, were necessary to carry out this mission, and the proposed methodology was used to determine the average size of households, one or more models of diets in line with local preferences in Cameroon, relatively inexpensive and based on WHO recommendations for calories, proteins, fats, carbohydrates and fruits and vegetables per person per day, and decent housing standards, based on minimum housing standards for organizations, taking into account housing conditions in rural Cameroon (cocoa areas).

**Context:** Until the mid-1980s, Cameroon was an economically prosperous country. The economic crisis that appeared during this decade was caused in particular by the fall in the prices of raw materials which led to a sharp deterioration in the terms of trade. The policies tested since then aim to reduce dependence on raw materials and hydrocarbons as part of an economic diversification strategy with a view to making the country an emerging economy by 2035. According to World Bank data, the agriculture accounted for 17.4% of GDP in 2020. It includes a wide variety of cash crops (cocoa, coffee, banana, cotton, oil palm, sugar cane, rubber) and an important food sector (plantain, maize), cassava, etc). The bulk of exports (around 85%) is made up of unprocessed or under-processed products and the trade balance seems to be structurally in deficit. This deficit has been reinforced since 2021 by the high inflation experienced by the country. According to the latest survey of Cameroonian households carried out in 2014, the national poverty rate is 37.5%, i.e. more than 8 million people living below the poverty line which is 339,715 FCFA per adult equivalent per year. There are large regional disparities, with the poor population mainly concentrated in rural areas, which account for 90.4% of their total. Most of the poor come from households of more than 8 people (48%), those whose head is uneducated (46.9%) and whose main activity is in the informal agricultural sector. However, Cameroon has strong development potential and can rely on its significant natural resources to ensure inclusive economic growth and reduce poverty.

**Poverty rate:** Between 2001 and 2014, the poverty rate remained higher in rural areas than in urban areas. The poverty index went from 52% in 2001 to 55% in 2007, and 57% in 2014. The depth of poverty went from 17% in 2001 to 17.5% in 2007 to reach nearly 23% in 2014. In rural areas, the total number of poor people was 5.2 million in 2001. It rose to 6.3 million in 2007 and 7.3 million in 2014. At the regional level, the Far North regions, Nord, Nord-Ouest and Adamaoua are distinguished by fairly high poverty rates. The poverty rate is higher than the national average. Economic growth is accompanied by an increase in poverty in three of

these four regions. In the Far North, for example, the poverty rate rose from 56% in 2001 to almost 66% in 2007 and 74% in 2014.

**Importance of the cocoa sector in the economy of Cameroon:** In Cameroon, cocoa production is carried out in seven regions out of ten: Center (45.39%), South-West (31.18%), Littoral (11.1%), South (5.3%), West (3.7%), East (2.9%), and Adamaoua (0.04%). Cocoa production reached 241,000 tons during the 2018-2019 campaign. Its share in the primary sector is 6.25% and nearly 600,000 farmers are dedicated to its cultivation. It should be noted, however, that only 32% of the profits of the sector accrue to small producers, while exporters capture 66% of these profits (Lescuyer et al., 2019). Cocoa does not only contribute 0.9% to the national GDP (2018). The objective of the government of Cameroon is to triple national production by 2030, with an emphasis on improving yields, setting up new plantations and local supervision of cocoa production stakeholders. However, the majority of small producers have so far not received any support. They mainly employ family labor and rely on the most expensive intermediaries "field side" (method of purchase made directly at the edge of the farm) in particular with the so-called "coxeurs" (intermediaries who pay cash at low prices).

**Food/nutrition costs:** Healthy and adequate energy and nutrient intake have always been the cornerstone for optimal productivity throughout the life cycle. Dietary diversity, and in particular consumption of nutrient-rich foods including fruits, vegetables, nuts, beans and animal-source foods, is linked to greater nutrient adequacy [Kuyper, E.M., Engle-Stone, R., Arsenault, J.E., Arimond, M., Adams, K.P., Dewey, K.G. (2017) ]. Defining a decent wage for a community, takes into consideration the ability to obtain a model diet, necessary to meet the daily energy and nutrient needs of the target population. According to Richard and Martha Anker 2017, a model diet is defined as one that meets WHO 2019 recommendations on nutrition, is consistent with local food preferences, and is relatively low in cost for a nutritious diet. In the course of this study, we sought to find out the daily energy and some specific micronutrient needs, such as Calcium, iron, vitamin A and folates, of the main cocoa producing regions in Cameroon. This will be used to calculate the living income gap of the respective communities. These regions were grouped into three agro ecological zones: the Forest, Coastal and Savannah zones. Energy and nutritional needs were calculated based on the average energy expenditure of a household of 5.5 persons with physical activity level ranging from sedentary through moderate to very active. An average daily expenditure of 2266cal was assumed for rural Cameroonians with a body mass index of 21.7kg/m<sup>2</sup>. Foods consumed in the different regions based on food groups were listed taking into consideration the local realities and their culture. We used food composition tables and recommended number of portions per day, and also drew from contributions made by participants during the workshop with stakeholders, to develop the model diets for each region which were presented in form of tables. The calcium, iron, vitamin A and folate contents of these different foods are specified in the tables. Their diets vary based on their geographical locations. Cocoa farmers from the Centre, South and East regions have a plant based, roots and tuber rich and vegetable protein diet; the diet of those in the Littoral and South West regions is also plant based, roots, tubers and starchy fruits rich, but includes sea foods, while that of the West region is plant and cereal based, with very little animal products. Fruit choices will be seasonal. Their dietary habits include two main meals and no breakfast, and binge eating is nonexistent. WFP has estimated the cost of a nutritious

diet per household per day in Cameroon at 1425 frs. Comparing these results with those gotten from the field survey will determine the income needed to meet the nutrition gap.

**Decent Housing in Cocoa Areas of Cameroon:** In Cameroon, the concept of decent housing is generally analysed at national level. However, some specific works are available for the rural area specifically from the ministry in charge of housing. Climatic factors have a huge influence on the use of construction materials in the rural areas of Cameroon. The Eastern region tends to use intensive wood in their constructions. The center is tends to use mud for their walls and the littoral tends to build more board housing on stilts. The quality of housing in the rural area is gradually going down with the deterioration in the living conditions of populations. According to the Cameroonian household survey ECAM IV (2014), people in rural areas spend only 17.2% of their income on housing-related expenses. Data from the 3rd General Population and Housing Census (RGPH) establish that 15.5% of households are in a situation of occupation density and the promiscuity index is 1.9, i.e. about 6 individuals per room. This lackluster situation highlights the qualitative and quantitative deficit of housing in rural areas in Cameroon. In the rural area, clean water generally includes Camwater water (tap water), developed natural water sources, water from good quality wells, borehole water, etc. Those who do not have access to drinking water generally get water from the village river: at a same place, they take their bath, they wash clothes..., and fetch water to drink. Some do have wells with poor water quality. For garbage management, a space is reserved for manure which is located just behind the kitchen. The waste water is generally poured into the kitchen yard. Kitchen is often of low standard compared to the main house. Traditional toilets (non-standard) refer to those most often operate without water (dry toilets. The pit is shallower. The slab is often made of wood and the cabin is roofless). Decent toilets can be an improved latrine (slab with concrete and tiles) with or without water, flush water is an exception.

**Non-food, non-housing costs including education and health care (NFNH):** In rural areas, motorcycles are generally the most popular means of transport, due to road conditions and financial resources. The most frequently owned durable goods by households were mobile phones, televisions, watches, TV/satellite cables, and radios. In terms of means of transport, a motorbike or scooter, a bicycle, a car or a truck. The most frequently owned durables are mobile phones (85%), televisions (51%), watches (43%), TV/satellite cables (39%) and radios (39%). Ownership of agricultural land and farm animals is more prevalent in rural areas than in urban areas (EDS-V, 2018). In rural areas, 85.8% of households own agricultural land and 62.6% own livestock or farm animals. As for pet ownership, dogs and cats are the most common pets in rural areas. Most of the income from "community" exploitation in rural areas is paid back to the GIC for social projects (construction of schools, cultural centers, play areas, etc.). In rural areas, local alcoholic beverages such as Matango are consumed mainly in the Centre and Littoral regions, and Otondole mainly in the South and East. As far as food is concerned, local foods such as bushmeat, etc., can be found in public places such as roadsides, bus stops, drinking spots or small village restaurants and markets. Concerning personal care and clothing, Children are left without clothes, or with clothes that are torn and dirty all the time, and parents also wear dirty clothes all the time. The formal social protection system covers less than 12% of the total population

**Health:** According to ECAM III, 2008, the share of expenditure devoted to health is estimated at the national level at 3.9% of total household expenditure. This indicator does not make it possible to clearly differentiate households residing in rural areas from those residing in urban areas. The contribution of households to current health expenditure in 2019 is 72.2% (Report on health accounts in Cameroon 2018 – 2019). Health expenditure covers different types of services: small medical equipment, medical transport costs, consultations, health records cost, hospitalizations, nursing care, drugs, laboratory tests, deliveries, and post-partum care. The most common diseases in rural areas are: Malaria, HIV, Viral hepatitis, waterborne diseases (Scabies, Diarrheal diseases, and Typhoid fever), Occupational diseases and risks (machete injury ...). Snake bite, Diabetes, High blood pressure, Yellow fever, Dental problem, Sore eyes.

Concerning the reproductive Health in rural areas, very few women make prenatal visits and among those who make at least one prenatal visit, some do not return for continuity. In Cameroon, the discontinuity of prenatal care for women residing in rural areas is 41% [Rosine Angue ELLA, 2005]. Some studies show that during pregnancy, women make more use of natural pharmacopoeia in rural areas. In fact, the care of pregnant women is offered by various actors who mobilize local socio-cultural and ancestral know-how in this area, and the practice of home birth is predominant in some regions. Postpartum care is also less accessible.

In Cameroon, rural areas are characterized by the insufficiency and poor distribution of health facilities which lead to the poor recourse of the populations to conventional health care. In addition, there is a predominance of public health facilities. Furthermore, we note the absence and even the inadequacy of health personnel in some health facilities. A household is on average at a distance of 6.8 km from the nearest district hospital or district medical center, 5.2 km from the pharmacy or health center. -nearest pharmacy [MINSANTE, 2020]. People travel between 5 and 10 km on foot, for about 2 to 6 hours on foot to reach the nearest health center [Djoukou Kouontang, Sylvie, 2020]. Without however guaranteeing the quality of the services offered, it can be synonymous with long waits, ineffective treatments, extortion from patients, and lack of drugs in health facilities leading patients to engage in various therapeutic behaviors.

In terms of recourse to care, consultation in a health facility is very low in first intention, i.e. 24% the first reflex in the event of illness [Commeyras C et al, 2006]. More than half of patients (52%) use self-medication, with (51.1%) in rural areas [Institut National de la Statistique, 2012]. They also use traditional medicine

**Education:** In Cameroon, the education system is governed by the education orientation law; Law No. 98/004 of April 14, 1998. This law establishes the different levels of education. It also reaffirms the national option of biculturalism through two subsystems, inherited from the double French and English colonial supervision: the Anglophone subsystem and the Francophone subsystem. The functioning of the education system depends on the contribution of the State, development partners and households. Although below the recommendation of the Global Partnership for Education, which projects this average at 20%, 14.4% as average for

the last decade of education expenditure on total State expenditure reflects the State's commitment to education. Although public primary school is free and public secondary education is subsidized, updated data from ECAM IV establishes that households devote between 9% (for primary) and 10% (for secondary) of their income to education. However, this average percentage should be put into perspective by integrating household size and particularly the number of children attending school as well as the level at which they are enrolled in the estimation process. On the other hand, it is necessary to consider the level of household income to try to circumscribe the share of income allocated to education by cocoa farmers. Obviously, households with no educated descendants will not devote any part of their income to education. This is the case for 21.6% of households in those rural areas [Ibidem, P. 42]. Thus, it can logically be argued that the more a household has children or young people in school, greater is the share of its income devoted to education. The overall costs of educating one child in public primary school at a minimum amount of 60,000 CFAF per year. In the public comprehensive secondary 1<sup>st</sup> cycle, this estimate is around 100,000 CFAF per year. The costs thus estimated cover the needs relating to school fees, materials and supplies as well as other expenditures for auxiliary or related services. By placing the household income at the poverty line, this represents an average of approximately 17.6% for the education of a child in primary school and 29.43% in comprehensive secondary 1<sup>st</sup> cycle.

## Key Abbreviations

BMR: Basal Metabolic Rate

BMI: Body mass index

CD: Communicable diseases

DASH: Dietary Approach to Stop Hypertension

DMC: District medical center

ECAM: Enquête Camerounaise Auprès des Ménages (Cameroon Household Survey)

EDS: Enquête démographique de Santé (Demographic Health Survey)

EDS MICS: Enquête démographique de santé à indicateur multiple (Multiple Indicator Demographic Health Survey)

EU: European Union

FAO: Food and Agriculture Organization  
GCE: General certificate of education

GIZ: Gesellschaft für Internationale Zusammenarbeit (Society for International Cooperation)

HIV: Human immunodeficiency virus

IHC: Integrated health center

ILO: International Labor Organization

INS: Institut national des statistiques (National Institute of Statistics)

IT: information tools

IITA: International Institute of Tropical Agriculture

JRC: Joint Research Centre

LLIN: Long-lasting insecticidal nets

MDGs: Millennium Development Goals

MINHDU : Ministère de l'Habitat et du Développement Urbain (Ministry of Housing and Urban Development)

MINEFOP: Ministère de l'emploi et de la formation professionnelle (Ministry of employment and vocational training)

MINSANTE: Ministère de la santé publique (Ministry of Public Health)

NFNH: Non-food, non-housing costs including education and health care

ONCC: Office National du Café et du Cacao (National Office of Coffee and Cocoa)

PNDS: Plan National de Développement Sanitaire (National Health Development Plan)

RGPH: Recensement général de la Population et de l'Habitat (General Population and Housing Census)

STI: Sexually Transmitted Infection

TB: Tuberculosis

USDA: United States Department of Agriculture

WHO: World Health Organization

## **Section I: Introduction**

### **1- Background**

Ivory Coast, Ghana and Cameroon are major suppliers of cocoa into the EU market (1 200 000 tones) who is the world's largest importer of cocoa accounting for imports worth almost 60% of world imports. In these 3 African countries, it is estimated that cocoa farmers receive on average only 5% of the final price of the product. A large proportion of cocoa farmers therefore lives below the poverty line. While poverty and other root causes are not unique to cocoa, the cocoa supply chain contributes and, in many cases, reinforces structural poverty, inequalities and exclusion. Gender inequality, social exclusion and environmental degradation are all underlying factors for children's vulnerability and also perpetuate poverty. Given these challenges and in the context of the European Green Deal Initiative to pursue alliances for sustainable food systems, the European Commission launched a multi-stakeholder dialogue in 2020 bringing together representatives of Côte d'Ivoire, Ghana and Cameroon as well as representatives of the European Parliament, EU Member States, cocoa growers and civil society. The dialogue aimed to deliver concrete recommendations to advance sustainability across the cocoa supply chain through collective action and partnerships. As an outcome of this dialogue, the "Sustainable Cocoa Program in Côte d'Ivoire, Ghana and Cameroon" was initiated in 2021. The Joint Research Centre (JRC), in cooperation with partners (The European Forest Institute, FAO and GIZ) and in coordination with the EU Delegations in Côte d'Ivoire, Ghana and Cameroon, supports this initiative by providing a range of scientific services according to individual country needs. Together with the Office National du Café et du Cacao (ONCC), the official Cameroonian body in charge of the organization of the cocoa supply chain, an information gap has been identified on the living conditions, cost of living and income needs of cocoa farmers in Cameroon. It is estimated that cocoa farmers in the Centre region of Cameroon earn approximately 995 US\$/ha annual gross income or 33 US\$/ha net income (Mithöfer et al., 2017). The reasons for such low incomes are considered to be low cocoa prices and low productivity of Cameroonian cocoa. To identify strategies of closing the gap between the actual income generated by cocoa farmers and the needs to enable a "decent life" that allows for an adequate diet, decent housing, educational, health and other needs, more detailed data on the extent of the gap is required. Therefore, the JRC needs to identify the level of income that is required for Cameroonian cocoa farmers to lead a "decent life", and more specifically define the concept of "nutritious diets", ideal level of education and health and decent housing, in the Cameroonian context. Hence, the purpose of this study entitled "Living Income Gap for Cocoa Farmers in Cameroon" which is the subject of these technical and financial proposals at the request of JRC. This study aims to prepare a large-scale survey in the cocoa growing regions of Cameroon. It will be about:

- Identify secondary data sources available in Cameroon
- Review and refine proposed concepts (e.g. define model diet, decent housing, etc.) and questionnaires and make suggestions for improvement
- Identify information and data on household needs (e.g.: education, health, transport, etc.).
- Organize one restitution workshops with government representatives.

## **2- Cameroon Context**

### **2.1. Cameroon: Lower middle-income economy with high levels of rural poverty**

According to demographic projections from the last population census, Cameroon is home to more than 25 million inhabitants currently. Bordering the Atlantic Ocean, it shares borders with the Central African Republic (CAR), Gabon, Equatorial Guinea, Nigeria and Chad. It is a lower-middle-income country.

Until the mid-1980s, Cameroon was an economically prosperous country. Indeed, the Cameroonian economy recorded real growth rates of around 7% during two decades of regular growth, going up to double digits between 1977 and 1980. The economic crisis that appeared during this decade was caused in particular by the fall in commodity prices which led to a significant deterioration in the terms of trade. This crisis was notably sanctioned by the devaluation of the CFA franc in 1994, thus aggravating a significant deterioration of the socio-economic situation. With the support of donors, the government has undertaken economic recovery measures. In this context, it has carried out stabilization and structural adjustment programs whose outcomes have enabled the country to embark on a new cycle of growth, particularly within the framework of the poverty reduction initiative.

The policies tested since then aim to reduce dependence on raw materials and hydrocarbons as part of an economic diversification strategy with a view to making the country an emerging economy by 2035. Indeed, the country remains largely dependent on the vagaries of the international situation as well as conjectures of its socio-economic or political situation. Since 2010, growth has experienced an ups and downs due, among other things, to the persistence of security problems in the Far North, North West and South West regions as well as the drop in state order.

According to World Bank data, agriculture accounted for 17.4% of GDP in 2020. It includes a wide variety of cash crops (cocoa, coffee, banana, cotton, oil palm, sugar cane, rubber) and an important food sector (plantain, maize, cassava, etc.). The secondary sector represents 23.3% of GDP. Crude oil remains an important resource, however, its weight in GDP and in exports has been relatively reduced. Gas exploitation, on the other hand, is booming. Finally, the services sector (52% of GDP in 2020) is dominated by transport, trade, hotels and restaurants and financial services. The bulk of exports (around 85%) is made up of products that are not or are still too little processed (crude oil, logs and sawn wood, cocoa, liquefied natural gas, cotton, raw aluminum), and the trade balance appears to be structurally in deficit.

This deficit has been reinforced since 2021 by the high inflation that the country is experiencing. It is mainly due to the shortage and the increase in the price of basic products due to the disruption of the global value chain linked to the Covid-19 pandemic and the ongoing conflict between Ukraine and Russia. This situation accentuated the national structural vulnerabilities, which did not already allow an equitable reduction of poverty. The difficulties thus identified are due to geographical and social inequalities, an unfavorable commercial environment characterized by delays in infrastructure equipment, and weak governance.

According to the latest Cameroonian household survey conducted in 2014, the national poverty rate is 37.5%, i.e. more than 8 million people living below the poverty line which is 339,715 FCFA per adult equivalent and per adult year. These are people who are not able to have 931 FCFA per day and per adult-equivalent to meet their basic needs. There are great regional disparities, with the poor population being mainly concentrated in rural areas, which account

for 90.4% of their total. Most of the poor come from households with more than 8 people (48%), those whose head is uneducated (46.9%) and whose main activity is in the informal agricultural sector.

Furthermore, Cameroon is prone to flooding, deforestation, recurrent droughts in its northern part and an uncertain duration of the rainy seasons. In varying proportions across the country, these situations, which reflect climate change, affect the agricultural sector and gradually lead to the forced displacement of populations. These affects cause significant damage to production activities and infrastructure, while aggravating the vulnerability of certain human groups.

However, Cameroon has strong development potential and can rely on its significant natural resources to ensure inclusive economic growth and reduce poverty.

## 2.2. Poverty rates

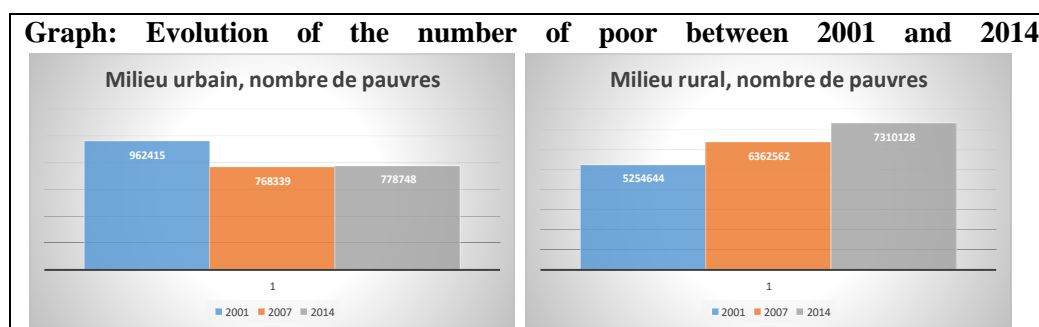
Between 2001 and 2014, the poverty rate remained higher in rural areas than in urban areas. From 52% in 2001, the poverty index rose to 55% in 2007 and nearly 57% in 2014. Living in a rural area is more vulnerable to economic and social exclusion. An analysis of the depth of poverty provides additional elements. The depth of poverty fell from 17% in 2001 to 17.5% in 2007 to reach nearly 23% in 2014. This means that in 2014 the poor in rural areas moved further away from the poverty line than in 2007 and 2001. Similarly, disparities between the poor widened between 2007 and 2014.

**Table 1: Evolution of poverty indicators according to place of residence**

	2001			2007			2014		
	Urban	Rural	Total	Rural	Urban	Total	Urban	Rural	Total
<b>Incidence (%)</b>	17,9	52,1	40,2	12,2	55,0	39,9	8,9	56,8	37,5
<b>Depth (%)</b>	4,3	17,3	12,8	2,8	17,5	12,3	1,8	22,9	14,4
<b>Severity (%)</b>	1,6	7,7	5,6	1,0	7,2	5,0	0,6	11,7	7,2
<b>% population</b>	34,8	65,2	100,0	35,3	64,7	100,0	40,3	59,7	100,0
<b>% poor</b>	<u>15,5</u>	<u>84,5</u>	<u>100,0</u>	<u>18,8</u>	<u>89,2</u>	<u>100,0</u>	<u>9,6</u>	<u>90,4</u>	<u>100,0</u>

**Source :** ECAM 4

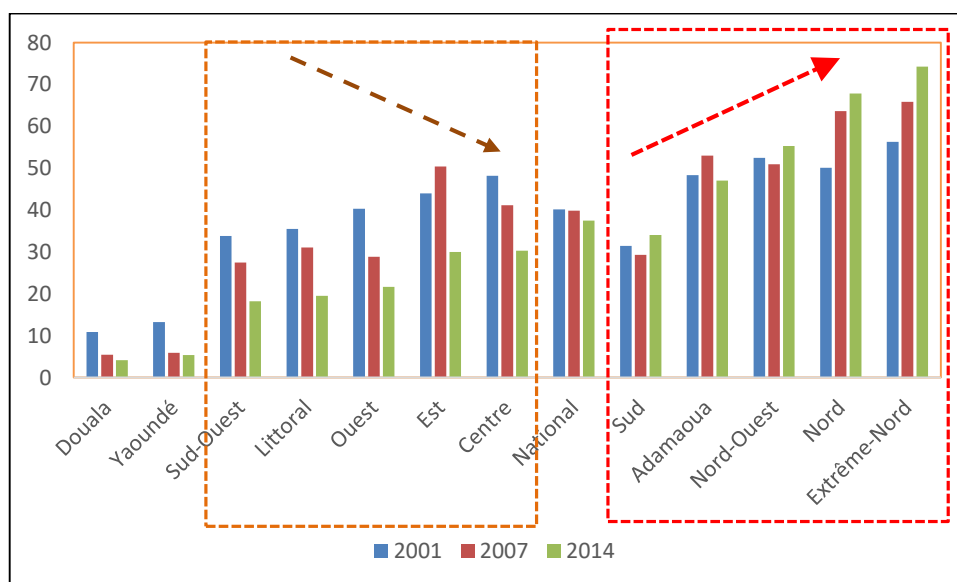
This development justifies on the one hand why the number of poor people is very high in rural areas and, on the other hand, why this number is increasing more rapidly in rural areas. In fact, in the rural area, the total number of poor people was 5.2 million in 2001. It rose to 6.3 million in 2007 and 7.3 million in 2014.



**Sources:** ECAM 2, ECAM 3, ECAM 4 (INS)

At the regional level, *the regions of the Far North, North, North West, and Adamaoua are distinguished by fairly high poverty rates*. The poverty rate is higher than the national average. Economic growth is accompanied by an increase in poverty in three of these four regions. In the Far North, for example, the poverty rate fell from 56% in 2001 to nearly 66% in 2007 and 74% in 2014.

**Graph: Poverty rate by region**



**Source:** ECAM 2, 3 et 4 (INS)

### 2.3 Importance of the cocoa sector in the economy of Cameroon

While the main production basin of the cocoa was historically located in the region of South-West and Littoral, it currently extends to seven regions out of ten<sup>1</sup> in Cameroon with a strong concentration in the northern part of the savannah zone in the Center region. Several reasons explain this extension of cocoa farming: demographic pressure and fragmentation of plots, the search for more fertile land in the forest zone and, more recently, the security problems in the South West and North West regions. Another reason related to the development of sustainable cocoa without deforestation has motivated the move of cocoa cultivation to the savannah zone. Cocoa production reached 241,000 tons during the 2018-2019 campaign. Its share in the primary sector is 6.25 percent and nearly 600,000 farmers are dedicated to its cultivation. It should be noted, however that only 32 percent of the profits of the sector go to small producers, while exporters capture 66 percent of these profits (Lescuyer et al., 2019). Although the liberalization of the sector has made it possible to relaunch production for a decade, cocoa doesn't only contribute 0.9 per cent to the national GDP (2018)<sup>2</sup>. The objective of the

<sup>1</sup> South-West, South, Littoral, East, North-West, Center, West

<sup>2</sup> It was contributing nearly 2 percent to it two decades ago.

Government of Cameroon is to triple national production by 2030, with a focus on improving yields, the implementation of new plantations and local supervision of cocoa production actors. However, this objective of tripling the cocoa production could lead to an increasing forest degradation, unless productivity cannot be increased in existing farms and practices agroforestry are developing in areas of savannah. (CAFI, 2021; FAO et al., 2022).

This is why, since 2018, the Government of Cameroon has embarked on the path of promotion of “Zero Deforestation” in the cocoa farming. Three forms of support have been developed since a decade. Public support, partners and private support. Although the majority of cocoa farmers are small scale producers carrying out their activities in the forest without support, the German cooperation agency had initiated a support project for cocoa farming in the savannah, association with other food products, in order to limit plantations in the forest (Lescuyer and al., 2019).

However, the majority of small-scale producers have so far received no support. They mainly employ family labor and rely on intermediaries with the highest “field-side” bids (purchasing method made directly at the farm gate) in particular to the so-called “coxeurs” (intermediaries who pay cash at the low prices). By favoring this mode of payment, the small producers forego remuneration more important offline. The big ones and medium-sized farms which represent less than 1 percent of producers, use a cheap labor resulting from the influx refugees and internally displaced persons. Moreover, it is noted that owners of large holdings benefit, among other benefits, from subsidies used to remunerate the local employees, although the profitability of their activities is not proven (Lescuyer et al., 2019).

### **3- Aim and objective of the study**

The objective of the contract is to identify the living income level for cocoa farmers in Cameroon. This included the following steps:

- Define and complete the conceptualization of a “decent life” in the context of the Cameroonian cocoa sector, including an adequate diet, decent housing, educational, health and other needs in line with the Anker methodology;
- Review and improve draft questionnaires for the large-scale survey on the living income gap;
- Verify above-mentioned concepts/ definitions with local stakeholders.

### **4- Methodology for data collection for concept and definition of a living income**

To define and complete the conceptualization of a “decent life” in the context of the Cameroonian cocoa sector we started from the definition of the cost of a basic but decent life in cocoa growing regions of Cameroon knowing that from this definition, we would deduce that of the corresponding decent income. To that effect, we considered the following three dimensions: 1) food security, nutrition, and health; 2) socio-economic and equity; 3) environmental sustainability. We did this following the three elements of the assessment strategy specified in the ToR to capture: (a) socio-economic and gender parameters across region within the cocoa production landscape (average household size, income and livelihood sources/opportunities, current expenditure patterns per group, level of education by gender,

etc.); (b) food security, nutrition and health parameters (food consumption scores, dietary diversity score, calories intakes, food availability-cal/cap/day, health care needs and health care expenditures, etc.); and (c) environment sustainability and equity parameters (housing facilities and standards, farm size, main means of energy, alternative sources of energy used, etc.) in a cocoa growing areas.

Given the diversity of component to consider, several sources of data, mainly qualitative, was necessary to carry out this mission. The proposed methodology was used to determine the average household size, model diet(s) consistent with local preferences in Cameroon, relatively inexpensive and based on WHO recommendations for calories, protein, lipids, carbohydrates and fruits and vegetables per person per day, and decent housing standards, based on minimum housing standards bodies, taking into account housing conditions in rural Cameroon (cocoa areas). The methodology that we used is more detailed in the introduction of each component of the definition of cost of basic but decent life in cocoa growing regions in Cameroon.

## **Section II: Cost of a basic but decent life in cocoa growing regions of Cameroon**

### **2.1. Food/nutrition costs**

#### **2.1.1. Guiding principles for a model diet for rural areas in Cameroon**

Healthy and adequate energy and nutrient intake have always been the cornerstone for optimal productivity throughout the life cycle. Dietary diversity, and in particular consumption of nutrient-rich foods including fruits, vegetables, nuts, beans and animal-source foods, is linked to greater nutrient adequacy [Kuyper, E.M., Engle-Stone, R., Arsenault, J.E., Arimond, M., Adams, K.P., Dewey, K.G. (2017) ]. For this to be attained, a model diet based on the needs of a specific population is developed by the country. According to Richard and Martha Anker 2017 [Richard Anker and Martha Anker, 2017], a model diet is defined as one that meets WHO 2019 recommendations on nutrition, is consistent with local food preferences, and is relatively low in cost for a nutritious diet. This notion was defined taking into consideration the definition of a living wage, which is the amount a typical size family needs per month for a basic but decent life. To consider the model diet for cocoa producing communities in Cameroon, we had to take into consideration the living income of these people. A living income is the net annual income required for a household in a particular place to afford a decent standard of living for all members of that household.” (Living Income Community of Practice)Unfortunately, for the Cameroonian population, the Ministry of Health, has not defined a model diet.

Cameroon is still facing the triple burden of malnutrition (undernutrition, micronutrient malnutrition, and overweight). Productivity growth for many nutritious foods such as animal source foods, fruit, and vegetables has been stagnant in recent years. Cameroon’s productivity for cereals is less than half the global average, and for vegetables it is less than a quarter [WHO, 2019] The Demographic and Health Survey (DHS) 2018 reported that about 11 percent of children under 5 in Cameroon are overweight and 29 percent are stunted. In addition, anaemia, a proxy indicator of iron deficiency, affects 57 percent of children under 5 and 40 percent of women of reproductive age (3). A higher percentage of households in rural areas are food

insecure (22.2%) than households in Yaoundé and Douala (10%) and other urban centers (12.4%). At the regional level, Far-North has the highest prevalence of food insecure households (33.6%), followed by North West (18.1%) and West (18%). The lowest prevalence of food insecurity was in Littoral (5.9%), South (6.9%) and Centre (11.1%). In rural areas, the most common sources of income are agriculture and small businesses, while in urban areas, these are public or private skilled labour (37.1%) and traders (20.3%) [National Institute of Statistics (Cameroon) and ICF. 2020]

**The model diet:** should be in line with local preferences and of relatively low cost, based on WHO recommendations for a model diet [Comprehensive Food Security and Vulnerability Analysis, WFP 2017] which includes recommendations for calories, proteins, fats, carbohydrates and fruits and vegetables per person per day. It should generally include 11 food groups with around 20 food items [Kuyper, E.M., 2017]. These recommendations include energy requirements for different age groups based on their energy expenditure according to WHO recommendations. These are 11-12% of the calories from both animal and protein sources; some dairy (which is rich in calcium and high quality protein) should be included in the diet, especially for children [ILO 2014]: 15-30% from fat sources and 55-75% from carbohydrates. In addition to these, at least 400g of fruits and vegetables were to be consumed to make up for micronutrients and fiber needs.

### 2.1.2 Agro ecological zone location and dietary habits

Currently over 40 percent of Cameroonians are involved in agriculture which employs 70 percent of the workforce and contributes 42 percent to GDP, yet the majority are smallholders with fewer than 2 hectares [Filling the Nutrient Gap, Cameroon.(WFP, 2021)] The cocoa producing areas in Cameroon are found mostly in the Centre and East regions, South West and Littoral regions. This southern forest (including the regions of Centre, East, Littoral, South and South West) is situated in the maritime and equatorial zones. This region is characterized by dense vegetation, a vast hydrographic network and a hot and humid climate, with abundant rainfall. [Comprehensive Food Security and Vulnerability Analysis, WFP 2017] Here, the main carbohydrate staples are roots and tubers such as cassava, cocoyams, yam and sweet potatoes; starchy fruits such as bananas and plantains; grains such as maize, rice and their transformed derivatives including wheat flour products. The main protein sources are legumes, nuts and seeds, which are vegetable protein sources and a lesser quantity, meat, fish, sea foods poultry and eggs; oils such as palm oil, refined vegetable oils and oily seeds and fruits serve as fats sources; while vegetables serve as the main source of fiber. Fruits and animal proteins are consumed in small quantities and sometimes sparingly [ILO 2014].

The western highlands (covering the regions of West and North West) are characterized by volcanic lands that allow for the cultivation of coffee and other cash crops [National Institute of Statistics (Cameroon) and ICF. 2020] Here the carbohydrate staples are more cereal based: maize and its products and to a lesser extent, rice. Other staples like banana, plantain, cocoyams, taro, yams and cassava with their derivatives are also consumed. Protein sources are mostly legumes and pulses such as beans, groundnuts and soybean, with meat, poultry, fish and eggs being consumed sparingly. Oils such as palm oil, refined vegetable oils and oily seeds and fruits serve as fats sources; while vegetables serve as the main source of fiber. The consumption of fruits is regular, even though small.

**Table 1: Foods consumed in the different cocoa producing agro ecological zones**

FOOD GROUP	FOOD	AGRO ECOLOGICAL ZONES					
		FOREST			COASTAL		SAVANNAH
		CENTRE	SOUTH	EAST	LITTORAL	SOUTH WEST	WEST
CEREALS	Corn						
	Rice						
ROOTS AND TUBERS	Cassava and its products						
	cocoyam						
	yam						
	Sweet potatoes						
	Irish potatoes						
	Taro						
LEGUMES	Beans						
	Soya beans						
MILK AND MILK PRODUCTS	Milk						
	Milk products						
AVAILABLE ALTERNATIVES	Cray fish						
	Small fishes (dried)						
	Cassava leaves						
	Soya						
MEAT FISH POULTRY AND EGGS	Game						
	Cattle						
	poultry						
	Fish (fresh and dried)						
	Sea foods						
	eggs						
VEGETABLES	Bitter leaves (vernonia)						
	Cassava leaves						
	Huckle berry						
	Green (amaranthus)						
	Eru (gnetum africanum)						
	Egg plant						
	Cabbage						
Tomatoes							

FRUITS	Mango						
	Pawpaw						
	Oranges						
	Pineapple						
	Watermelon						
	Guava						
	Avocado						
	African plums						
OILY SEEDS AND NUTS	Palm nut						
	Ground nuts						
	Melon seeds						
	Sesame seeds						
	Dika nuts						
	Ndjansan						
OILS AND FATS	Palm oil						
SUGAR	Sugar						
TEA, COFFEE AND ALTERNATIVES	Lemon grass tea						
	Tea						
	infusions						
SALT AND SPICES	Salt, pepper						
	spices						

Source: results from workshop.

**Expenditure on food:** The mean per capita monthly expenditure on foods is at 13,500 FCFA. In terms of shares, this means that households spend more than half of their monthly budget on food, with peaks in the regions of the Great North, where this proportion reaches 72.6% in Far-North, and 68.3% in Adamawa and 68.4% in North. Rural households spend a higher portion (62.2%) of their budget on food than their urban counterparts (45.4% of households in Yaoundé and Douala and 57.1% in other urban centers). Moreover, the share of food expenditure over the total expenditure decreases as the wealth of the household increases, from 72.6% of the households in the very poor quartile to 47.3% of those in the better-off quartile. The regions of the Great North, rural areas and the lowest wealth quartile also had the highest proportion of households spending more than 75% of their budget on food, [National Institute of Statistics (Cameroon) and ICF. 2020]. Cereals take the greatest share of the total households' expenditure (15.2%), followed by meat (8.7%), fish (5.7%) and tubers (2.4%). Fish and meat are not frequently consumed throughout the week; however, the large share of expenditure on these commodities might be due to their high prices. Consistent with the low food consumption pattern, expenditure on milk and dairy products covers only 1.2% of the total monthly household budget.

**Energy expenditure:** In rural Cameroon, the rate of male participation in the labor force for ages 25+ was 91.4% in 2014 and the rate of female participation labor force was 82.0% [Filling the Nutrient Gap, Cameroon.(WFP, 2021)] In contrast, reported rural male and female unemployment rates in 2014 were very low at 0.5% and 0.6% respectively. Time-related part-time employment rate (less than 35 hours per week) in 2018 in Cameroon for ages 15+, however, were high at 37.2% for males and 31.9% for females according to the ILO model estimates.

To determine the energy needs of the population, we used the average adult height for men as 172.13cm and for women as 160.41cm [9] National Institute of Statistics (Cameroon) and ICF. 2020].The physical activity levels of the different family members which ranged from sedentary (, moderate and vigorously active and their basal metabolic rates which were calculated using the Schofield equations for males and females as follows [Food and Agriculture Organization of the United Nations, 2013]:

BMR per day for males ages 30–60 =  $873.1 + 11.472 \times \text{kg}$

BMR per day for females ages 30–60 =  $845.6 + 8.126 \times \text{kg}$

**Household family size:** The model diet excel worksheet available through the Anker Living Wages Around the World [12]US Department of Health and Human Services, 2006] was then used to calculate the energy and nutrient needs per household, using the average rural Cameroon household size of 5.6 members. This household size was elaborated on by The Report on the Living Income Reference Value for Rural Cameroon 2020, which identified family size as 5.5 with 2 adults and 3.5 children and workforce/ family 1.71, [INS / ECAM 5].

To draft a model diet, we assumed the following for Cameroon:

- 2266 calories required per person for family of 5.5 members (2 adults and 3.5 children)
- The FNG estimated a nutritious diet for a model household of five members: breastfed child (12–23 months) with light activity level; school-age child (6–7 years) with moderate activity level; adolescent girl (14–15 years) with moderate activity level; breastfeeding woman with moderate activity level; adult man with vigorous activity level, [US Department of Health and Human Services, 2006]
- BMI of 21, as this was the standard suggested by the Anker methodology. However, a 2000 study of habitual diets in rural and urban Cameroon [Cameroon’s Ministry of public health, 2011] found rural women to have a BMI of 22.3kg/m<sup>2</sup> and rural men to have a BMI 21.9 kg/m<sup>2</sup>, which fell in the normal range between 18.5 kg/m<sup>2</sup> and 24.9 kg/m<sup>2</sup>. This gave an average BMI of 21.7 kg/m<sup>2</sup>.

With regards to micronutrient needs, we considered the fact that 57% of children aged 6–59 months and 39 % of women aged 15–49 years suffer from anaemia, indicating a prevalence of iron deficiencies [Léonie Nzefa Dapi, 2005] Data from 2011 found that among children aged 1–5 years, 69 percent suffered zinc deficiency, 35 percent were deficient in vitamin A, and 28 percent in vitamin B12 [Mennen, L.I., 2000]

### 2.1.3 Daily calories intake and macronutrient servings per day

At the end of the calculations, we developed the recommended amount of calories, number of daily portions and calories per portion per food group and associated foods based on the most affordable food items (see table below). We used local and affordable sources for all these nutrients based on their eating habits and also made allowance for 300g of fruits and vegetables excluding potatoes, sweet potatoes, cassava, per day [Kuyper, E.M., , 2017] and not 400g as recommended by WHO [Eric Jazet Kengap, 2016] This was done in line with local realities and 11 food groups were included in the study: cereals and grains; roots and tubers; starchy fruits; pulses, legumes and nuts; dairy; eggs; fish and meat; green leafy vegetables and other vegetables; fruits and other fruits; oils and fats; sugar; nonalcoholic vegetables [Kuyper, E.M., , 2017] 20 foods were selected for these groups based on their frequency and then analyzed in terms of the quantities consumed per portion. The target number of servings per food group per day was based on the DASH dietary pattern for a 2000 kcal (8368 kJ) diet [Léonie Nzefa Dapi, 2005] In this diet, grains ( including roots, tubers and starchy fruits) provide 6-8 servings; vegetables 4-5 servings; fruits 4-5 servings; milk and milk products 2-3 servings; meat, poultry and fish 5-6 servings; nuts seeds and legumes 4-5 servings per week; fats and oils 2-3 servings and sweets and added sugars 5 or less per week. We adjusted the number of servings by multiplying the number of servings suggested in the DASH 2000 kcal (8368 kJ) /capita per d plan by the ratio of 2266 kcal (9954KJ) / 2000 kcal (8786 kJ).

**Table 1: Calorie and micronutrient intakes in the Centre, East and South (Forest agro ecological zones)**

	Recommendations from WHO/FAO ( )	Food item	Edible grams	Calories per 100 grams	Calories per consumed amount	Calcium Per consumed amount	Iron per consumed amount	Vit A-RAE (mcg)/retinol (mcg)	Folate (mcg)	Comments
1. A. Cereals and grains (e.g. rice, wheat, maize etc.)	4 to 5 servings (a serving provides 20g of carbohydrates)	Maize (grains)	100	351 for corn flour whole grain (OR corn whole grain yellow = 365?)	351	5	1.3	0	26	Regularly consumed in form of cornfufu, Sanga, boiled or roasted.
		Rice	102.2	361	368.2	8.4	0.52	0	20.4	Rice is subsidized by the Cameroon government,
		Wheat	51.3	340	174.4	9.75	1.03	0	12.31	
	1 to 2 servings									
1.B. Prepared cereals (e.g. bread, noodles)	1 to 2 servings	Corn porridge (liquid)	80	48cal	38.4	8	.03	0	Tr	Consumed with puff puff and beans
2.A Roots and tubers (e.g. potato, cassava, sweet potato)	3 - 4 servings	Cassava	225	160 (16% inedible)	360	96.7	1.57	0	54	Main staple
	4 – 5 servings	cocoyam	292	118 (16% skin)	344.6	32.12	1.75	0	64.24	
2. B. Starchy fruits and vegetables (e.g. plantains,	4 – 5 servings	Plantain	225g	122 (35% skin, stems)	274.5	15.75	0.9	4.5	49.5	

green banana)										
3. Pulses, legumes, nuts	1 – 2 servings. 11-12% of total calories protein:	Beans	75	346 (average bean)	259.5	55.5	4.23	2.25	317.25	Commonly eaten at breakfast and sometimes at lunch
		Groundnut	35	578	202.3	16.45	1.37	0	38.5	Commonly eaten
4. Dairy (milk)	Milk: in general, 1 cup of milk per child is recommended and some milk for adults to add to tea/ coffee (quarter of a cup).	Powdered milk	15	496	74.25	145.2	0.105	34.2	5.85	“Milk products are expensive, less available and not considered as a “food” in the rural area.” (6).
		Milk alternative	Cassava leaves	53						
5. Eggs		Chicken egg	14	143 (chicken egg – 12% shell)	72.5	21.6	.78	44.02	6.58	1 egg per week of 50 g eaten very rarely.
6. Meats & Fish (beef, chicken, pork, dried/fresh fish, sausage, offal, liver)		Dried fish (mackerel)	28	116	32.5	11.17	0.27	. 12.6	0.28	Dried and frozen fish are consumed, but dried is more frequent. The quantity is about 30g, which is 2 servings per week.
		Game	28	330	92.4	4.2	2.8	0	3.36	this is the most commonly eaten meat in rural areas,

		Beef	30	248 (chuck blade roast w/bone 1/8 fat – 19% bone)	74.4	2.4	0.87	0	1.8	
		Pork	30	265	79.5	3	0.42	0	0.6	A preferred meat by the population
		Cat fish	22	117 (fish average) approx. 40% inedible	25.74	8.3	0.2	6.38	.048	1 serving of commonly eaten fish.
7. A. Green leafy vegetables (amaranthus, huckleberry, cassava leaves cabbage etc.)	(2-4 veg (incl. at least 1 green leafy veg) + 1-2 fruits + 1-2 legumes	Cassava leaves	54	30 (GLV average, 21% inedible)	16	149	2.97	154	63.72	one of the most consumed vegetables (7)
		Huckleberry (solanum Nigrum)(zom)	50	58 (GLV average, 21% inedible)	16	215	42	77	31	
7.B. Other veg (carrot, tomato, , eggplant, onion)		eggplant	50	30 (9% inedible of core and stem)	6.5	0.45	1.5	26	13	
8. Fruits (banana, orange,		papaya	150	36 (36% inedible, skin)	54	20	1.05	120	37.5	

apple, watermelon, tangerines, mango, papaya)		Mango	54	60 (29% inedible, seed and skin)	32	9.18	0.38	90.72	13.5	
		Alternatives: plum, avocado, , orange, watermelon, lemon								These fruits are frequently consumed in all of these regions
9. Oils & Fats (palm oil, palm nut pulp, refined palm oil, soybean oil, cotton seed oil)	30 – 34 g usually	Palm nut pulp	50	527	264			1425		Palm nut pulp is most commonly used. In total, this represents about 11.7%, other products like, groundnut and dika nuts contain fats.
10. Sugar	Usually about 15 to 20g	White sugar	20	400	80					Majority of living wage studies use 30 g.
11. Non-alcoholic beverages	2–3 cups per adult of either lemon grass or tea	Lemon grass tea)								
% added for salt, spices, sauces, condiments		Salt, pepper,								1% additional cost
% added for spoilage and waste										3% additional cost
% added for variety										11% additional cost

**Table 2: Daily Calorie and nutrients intakes in the Littoral and South West regions (Coastal agro ecological zones)**

	Recommendations from WHO/FAO ( )	Food item	Edible grams	Calories per 100 grams	Calories per consumed amount	Calcium Per consumed amount	Iron per consumed amount	Vit A-RAE (mcg)/retinol (mcg)	Folate(mcg)	Comments
1. A. Cereals and grains (e.g. rice, wheat, maize etc.)	4 to 5 servings serving provides 20g of carbohydrates, 1 to 2 servings	Maize (grains)	50	365	175.5	2.5	0.65	0	13	Consumed either boiled or roasted, as a snacked.
		Rice	102.2	361	368.2	8.4	0.52	0	20.4	
		Wheat flour	51.3	340	174.4	9.75	1.03	0	12.31	Consumed as pastry: puff puff, bread for breakfast
1.B. Prepared cereals (e.g. bread, noodles)	1 to 2 servings	Corn porridge (liquid)	80	48cal	38.4	8	.03	0	Tr	

2.A Roots and tubers (e.g. potato, cassava, sweet potato)	4 – 5 servings	Yams	370	128 (16% inedible)	473.6	96.2	2.96	7.14	96.2	Consumed with puff puff and beans  Main carbohydrate staples
	4 – 5 servings	cocoyam	292	118 (16% skin)	344.6	32.12	1.75	0	292	
	2-3 servings	Cassava flour	125	335	418	172.5	1.88	0	58.75	
2. B. Starchy fruits and vegetables (e.g. plantains, green banana)	4 – 5 servings	Plantain	225	122 (35% skin, stems)	274.5	15.75	0.9	4.5	49.5	
3. Pulses, legumes, nuts	1 – 2 servings.  11-12% of total calories protein:	Beans	75	346 (average beans)	259.5	55.5	4.23	2.25	317.25	Commonly eaten at breakfast and at lunch
		Melon seeds	30	593	207.6	39.2	2.13	0.03	20.3	Commonly eaten in vegetables or sauces
		Groundnut	35	578	202.3	16.45	1.37	0	38.5	

4. Dairy (milk and milk milk products)	Milk:	Powdered milk	5	496	24.8	0.14	0.003	11.6	19.5	Mostly drink powdered milk, 1½ tablespoons per cup, even though sparingly.
		Cray fish (dried)	10	332.45	33.25	37.60	2.86	1.5	4.4	
5. Eggs		Chicken egg	14	143 (chicken egg – 12% shell)	72.5	21.6	.78	44.02	6.58	1 egg per week of 50 g Eaten very rarely.
6. Meats & Fish (beef, chicken, pork, dried/fresh fish, sausage, offal, liver)		Dried fish (mackerel)	28	116	32.5	11.17	0.27	. 12.6	0.28	Dried and frozen fish are consumed, but dried is more frequent.
		Game	28	330	92.4	4.2	2.8	0	3.36	
		Beef	30	248 (chuck blade roast w/bone)	74.4	2.4	0.87	0	1.8	

				1/8 fat – 19% bone)						
		Fresh fish (mackerel)	22	124 (fish average) approx. 40% inedible	27.3	9.24	0.22	11.48	0.22	1 serving of commonly eaten fish. Common source of protein
7. A. Green leafy vegetables (amaranthus, huckleberry, cassava leaves cabbage etc.)	(400 g = 80 g x 5) 2-4 veg (incl. at least 1 green leafy veg) + 1-2 fruits + 1-2 legumes	Bitter leaves	50	58 (GLV average, 21% inedible)	16	81	1.1	77	31	Commonly consumed vegetables (7)
		amaranthus	50	39	19.5	190	3.1	120.5	39.5	popular vegetables
7.B. Other veg (carrot, tomato, pumpkin, squash, eggplant, onion)		Tomato	54	22 (9% inedible of core and stem)	11.9	7.02	0.32	26	11.34	

8. Fruits (banana, orange, apple, watermelon, tangerines, mango, papaya)		papaya	150	36 (36% inedible, skin)	54	20	1.05	120	37.5	
		Mango	54	60 (29% inedible, seed and skin)	32	9.18	0.38	90.72	13.5	
9. Oils & Fats (palm oil, palm nut pulp, refined palm oil, soybean oil, cotton seed oil)	30 – 34 g usually	Palm oil	30	900	270			1716		Palm nut pulp is most commonly used. In total, this represents about 11.7%, other products like, groundnut and dika nuts contain fats.

10. Sugar	Usually about 15 to 20g	White sugar	20	400	80					
11. Non-alcoholic beverages	2–3 cups per adult of either lemon grass or tea	Tea	10	1	0.14					
% added for salt, spices, sauces, condiments		Salt, pepper, green spices								1% additional cost
% added for spoilage and waste										3% additional cost
% added for variety										11% additional cost

Source:

[www.fitnigeria.nutri.facts](http://www.fitnigeria.nutri.facts)

kengan *et al*, 2016

FAO 2012

**Table 3: Daily Calorie and nutrients intakes in the West regions (Coastal ecological zones)**

	Recommendations from WHO/FAO ( )	Food item	Edible grams	Calories per 100 grams	Calories per consumed amount	Calcium Per consumed amount	Iron per consumed amount	Vit A-RAE (mcg)/ retinol (mcg)	Folate (mcg)	Comments
1. A. Cereals and grains (e.g. rice, wheat, maize etc.)	4 to 5 servings (a serving provides 20g of carbohydrates)	Maize (grains)	175	365	638.75	61.25	5.25	0	43.75	The most consumed staple in the West region  Consumed as pastry: puff puff, bread for breakfast or diner  consumed with puff puff and beans
	1 to 2 servings	Rice	80	361	215	6.6	0.41	0	16	
		Wheat flour	51.3	340	174.4	9.75	1.03	0	12.31	
1.B. Prepared cereals (e.g. bread, noodles)	1 to 2 servings	Corn porridge (liquid)	80	48cal	38.4	8	.03	0	Tr	
2.A Roots and tubers (e.g. potato, cassava, sweet potato)	4 – 5 servings	Potatoes	590	80(16% inedible)	472	64.9	4.72	5.9	106.2	
	4 – 5 servings	Sweet potatoes	500	92 (16% skin)	460	96	5.0	1885	165	

2. B. Starchy fruits and vegetables (e.g. plantains, green banana)	4 – 5 servings	Banana	450	106 (35% skin, stems)	477	30	1.35	535.5	4.5	Main carbohydrate staples
3. Pulses, legumes, nuts	1 – 2 servings.  11-12% of total calories protein:  Milk: 1 cup of milk per child is recommended and some milk for adults to add to tea/ coffee (quarter of a cup).	Beans	75	346 (average beans)	259.5	55.5	4.23	2.25	317.25	Commonly source of protein
		Melon seeds	30	593	207.6	39.2	2.13	0.03	20.3	Commonly eaten in vegetables or sauces
		Groundnut	35	578	202.3	16.45	1.37	0	38.5	
4. Dairy (milk)		Powdered milk	15	496	74.4	0.21	0.0045	17.4	29.3	Mostly drink powdered milk, 1 teaspoon per cup, even though sparingly.

		Soyabeans	20	413	82.6	41.2	1.3	0.2	76.2	
5. Eggs		Chicken egg	14	143 (-12% shell)	72.5	21.6	.78	44.02	6.58	1 egg per week of 50 g Eaten very rarely.
6. Meats & Fish (beef, chicken, pork, dried/fresh fish, sausage, offal, liver)		Dried fish (mackerel)	28	116	32.5	11.17	0.27	.12.6	0.28	Dried and frozen fish are consumed, but dried is more frequent
		Beef	30	248 (chuck blade roast w/bone 1/8 fat – 19% bone)	74.4	2.4	0.87	0	1.8	According to Kengap et al. (8) this is the most commonly eaten meat in rural areas,
		Pork	30	265	79.5	3	0.42	0	0.6	A preferred meat by the population

		Fresh fish (mackerel)	22	124 (fish average) approx. 40% inedible	27.3	9.24	0.22	11.48	0.22	1 serving of commonly eaten fish. Common source of protein
7. A. Green leafy vegetables (amaranthus, huckleberry, cassava leaves cabbage etc.)	(300 g = 80 g x 5) 2-4 veg (incl. at least 1 green leafy veg) + 1-2 fruits + 1-2 legumes	cabbage	50	33	16.5	42	0.4	14	44	
		Huckle berry	50	58 (GLV average, 21% inedible)	16	81	1.1	77	31	
		Tomato	54	22 (9% inedible of core and stem)	11.9	7.02	0.32	26	11.34	
		papaya	150	36 (36% inedible, skin)	54	20	1.05	120	37.5	
7.B. Other veg (carrot, tomato, pumpkin, squash, eggplant, onion)										
8. Fruits (banana, orange, apple, watermelon, tangerines,										

mango, papaya)										
		Mango	54g	60 (29% inedible, seed and skin)	32	9.18	0.38	90.72	13.5	
		Alternatives: plum, avocado, , orange, watermelon, lemon								
9. Oils & Fats (palm oil, palm nut pulp, refined palm oil, soybean oil, cotton seed oil)	30 – 34 g usually	Palm oil	30	900	270			1716		Palm nut pulp is most commonly used. In <b>total</b> , <b>this</b> <b>represents</b> <b>about 11.7%</b> , other products like, groundnut and

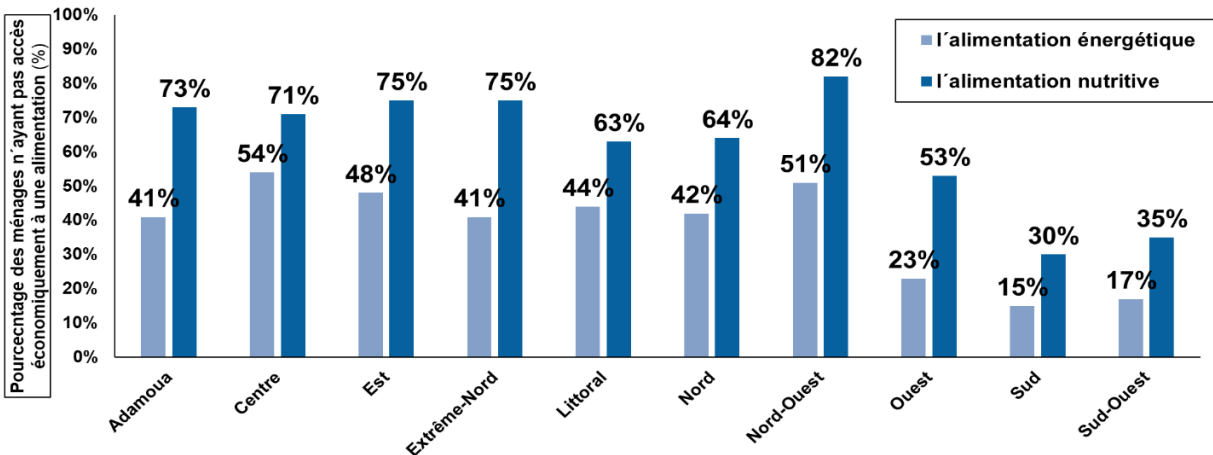
										dika nuts contain fats.
10. Sugar	Usually about 15 to 20g	White sugar	20	400	80					Majority of living wage studies use 30g.
11. Non-alcoholic beverages	2–3 cups per adult of either lemon grass or tea	Lemon grass tea	14	1	0.14					
% added for salt, spices, sauces, condiments		Salt, pepper, green spices								1% additional cost
% added for spoilage and waste										3% additional cost
% added for variety										11% additional cost

Source: Kenga *et al* 2016

FAO 2012, [www.fitnigeria](http://www.fitnigeria) nutri facts,

**Cost of foodstuff:** The ‘Staple Adjusted Nutritious Diet’ is defined as the lowest cost nutritious diet that includes a typical staple food and excludes foods that are prohibited (17). Several regions, including Far North, North, Adamawa and East, are exposed to recurring climate shocks such as floods and droughts, leading to food crises. Poor road infrastructure, land degradation, outdated agricultural practices, high post-harvest losses, and fragmented markets all severely limit people’s access to sufficient nutritious food due to hikes in food prices. (18). Post-harvest losses are very high, estimated at 15 % for soya, peanut, and beans, 25% for green leafy vegetables, and up to 40% for cassava.(19) Cameroon depends on high levels of imports for a number of strategic food commodities including rice, wheat flour, fish, and powdered milk. . In the FNG 2021 (7), most regional market surveys, several nutritious plant and animal source foods were found that deliver essential nutrients at a relatively lower cost compared to other foods. For example, a 50 gram serving of cowpea (also known as black-eyed pea) contains more than half of the young child’s requirements for protein, vitamin B1, folic acid, and magnesium, and unrefined palm oil is an important source of vitamin A. averagely, nutritious diets were inaccessible to 66% of rural households, compared to only 41% of energy dense diets (7).

**Table 5: access to energy dense foods as compared to nutritive foods in rural Cameroon**



Source: FNG Cameroon, 2021

The WFP filling the nutrition gap survey in 2021, used a daily energy requirement of 1800 to 2000 calories and got the cost of energy rich diets per household/ day at 720frs cfa and nutritious diets per household per day at 1258frs cfa. Using the estimated energy intake of 2266cal per day for an average family of 5.6 and extrapolating from proposed WFP 2021 cost, the cost of a nutritious diet per household per day will be estimated at 1425frs. Of this amount, the breastfeeding mother represents 30%, the infant 6%? The school age child 14%, the adolescent 26% and the father 24% (WFP, 2021).

This distribution and the estimated daily cost will be confirmed after the field survey that will be carried out.

## **2.2 Decent housing**

### **2.2.1 Decent Housing in Cocoa Areas of Cameroon**

In Cameroon, the concept of decent housing is studied in several national surveys including the national household surveys (ECAM 1 to ECAM 5) and national census (1976, 1987, and 2005). This concept is generally analyzed at national level, indicating that there is no specific concept of decent housing applied in the rural area. However, some specific works are available for the rural area specifically from the ministry in charge of housing. From these two main groups of work and survey, it can be underlined that the concept of decent housing does not consider a kind of decent housing line which can help distinguish decent housing from non-decent housing. To analyse decent housing in Cameroon, the study considers two main dimensions: (i) construction materials; and (ii) access to basic social services. In considering the two aspects, we assume that land property is secured.

### **2.2.2 Construction materials**

Climatic factors have a huge influence on the use of construction materials in the rural areas of Cameroon. The Eastern region where wood is abundant tends to use intensive wood in their constructions. The center where the ground is muddy tends to use mud for their walls and the littoral marked by humidity tends to build more board housing on stilts which have to cope with the rising waters as a result of hydromorphic soil and where infiltration is difficult.

Globally speaking, data from the 3rd population census show that: 90.2% of the population lives in housing built either as a concession/saré or in isolated houses; 89.% of the population lives in housing built with simple mud brick walls (41.4%), dried mud (39.5%) or other precarious materials (carabot, old metal sheets, cardboard, straw mats, plastic, etc.); 77.3% of the population lives in housing with a dirt floor, 64.8% of the population lives in simple traditional housing (36.2%) and improved traditional housing (28.6%). The constructions of the pre-independence period are still dominant in the rural areas, with a slight shift from plant huts to dried mud walls called "poto-poto".

After independence, cement and corrugated iron entered the list of construction materials. However, their impact is not very perceptible since in particular the dirt floor is still present in 77.3% of the rural dwellings. Moreover, even the fallout from this development is old. Most of the so-called improved traditional type housing bears the mark of the architecture of the 1960s to 1990s. These accommodations are made in the villages of a few prosperous farmers or a few city dwellers who keep connections with their village. Many of these accommodations are in the majority of cases in the process of dilapidation due to lack of maintenance.

The quality of housing in the rural area is gradually going down with the deterioration in the living conditions of populations. According to the Cameroonian household survey ECAM IV (2014), people in rural areas spend only 17.2% of their income on housing-related expenses. The old houses are not maintained and in many villages very few new ones are built. Therefore, 3 to 4 generations of descendants of the first owner live in certain houses. By way of illustration, data from the 3rd General Population and Housing Census (RGPH) establish that 15.5% of

households are in a situation of occupation density and the promiscuity index is 1.9, i.e. about 6 individuals per room. This lackluster situation highlights the qualitative and quantitative deficit of housing in rural areas in Cameroon. Regional specificities of construction materials used can help to analyze the situation.

### The Centre region

Traditional housing is well represented with its temporary materials. Even if the proportion of **roofs made of raffia mats** is drastically going down, a high proportion of **walls** remain in mud (poto-poto) or in **wood** and weakly in planks. The **floor** is also in **mud**. Houses are almost always on one level with few rooms and a kitchen located outside the main house. These houses require permanent and constant renewal of certain buildings and accessories.

The forest influences the type of habitat found in the Centre region. There is a social trend to the grouping of houses along the main roads, crossroads, places of commerce, and especially of worship. One of the characteristics of these houses is that at 65.6%, they have annexed constructions on their plots. This annex building is mainly used as a kitchen at 50.2% and secondarily (10.2%) as a dwelling. The construction is used for housing (88%) and to a lesser extent (1%) for trade, agriculture and livestock.

### The East Region

The habitat in the **Eastern region** is originally that of the Pygmy ethnic groups, the first inhabitants of Cameroon and whose main centres of settlement are located in this region for the most part, but also in the South and less in the Center. The architecture is relatively marked by a predominance of clay and wood. There is an **intensive use of forest resources** (leaves, lianas, tree bark, straw, bamboo, treated wooden board, etc.) and a **single-room single-storey** housing architecture.

### The Littoral region

The architectural landscape in the Littoral region is strongly dominated by single-family houses with ground floors only. The most common temporary materials are mostly wood. The distribution according to the types of construction and building materials can be highlighted. A “**pure traditional habitat**” is characterized by a **straw or plank construction**, a **wooden frame** which serves at the same time as a foundation, elevation with wood or straw, wooden frame or stake. An “**improved traditional housing**” is built from **concrete block foundation** or not, elevation with **cement mortar** one meter high or in wood, **wooden frame**. A “**modern housing**” is characterized by solid constructions (**blocks, terracotta bricks**); with a **tiled floor**, flat or corrugated **metal sheet roof**.

### The South region

The main characteristic of housing in the South region is the **precariousness and dilapidated state of the buildings**, most of which date from the 1950s and 1960s. The characteristics are the same as in the Eastern region except for a few details. However, there are more habitat

clustering factors in the South region, unlike the other regions and topographical factors do not greatly influence habitat establishment. There is a major architectural change boosted by the action of the local and external Elite who are building modern buildings there.

### The South-West region

Houses are made of **wooden materials** and **corrugated roofing sheets**. The pieces of wood used are locally obtained and treated for houses construction. Their availability and low cost explain why these materials are predominantly used in rural areas. According to Fombe and Agbortoko (2014), 40 percent of Buea houses are below standard. This percentage indirectly inform about the quality of houses in the rural area of this region. However, there is an **increasing use of standard materials** such as **cement blocks and concrete**.

**Table 1: construction materials used in cocoa regions**

Region	construction materials	floor	Average household size (ECAM4)	number of rooms (ECAM4)	kitcheen	Toilet
Centre	mud blocks	bare or cimented ground	5	4	external kitcheen	outdoor traditional toilet
	agglomerate blocks					
	dried mud (poto poto)					
	raffia bamboo					
	raffia leaves					
	metal/aluminum sheets					
East	mud blocks	bare or cimented ground	5	3	external kitcheen	outdoor traditional toilet
	agglomerate blocks					
	dried mud (poto poto)					
	raffia bamboo					
	raffia leaves					
	metal/aluminum sheets					
Littoral	Chinese Bamboo	bare or cimented ground	4	4	external kitcheen	outdoor traditional toilet
	Planks					
	Carabotes					
	earth bricks					
	agglomerated blocks					
	corrugated sheets					
South	earth blocks	bare or cimented ground	5	4	external kitcheen	outdoor traditional toilet
	raffia sheets					
	corrugated sheets					
South-West	wooden materials	bare or cimented ground	3	3	external kitcheen	outdoor traditional toilet
	mud bricks					
West	earth blocks	bare or cimented ground	4	4	external kitcheen	external kitcheen

**Sources: MINHDU (2018); Fombe and Agbortoko (2014); NIS (2021)**

Kitchen is often of low standard compared to the main house. Traditional toilets (non-standard) refer to those most often operate without water (dry toilets. The pit is shallower. The slab is

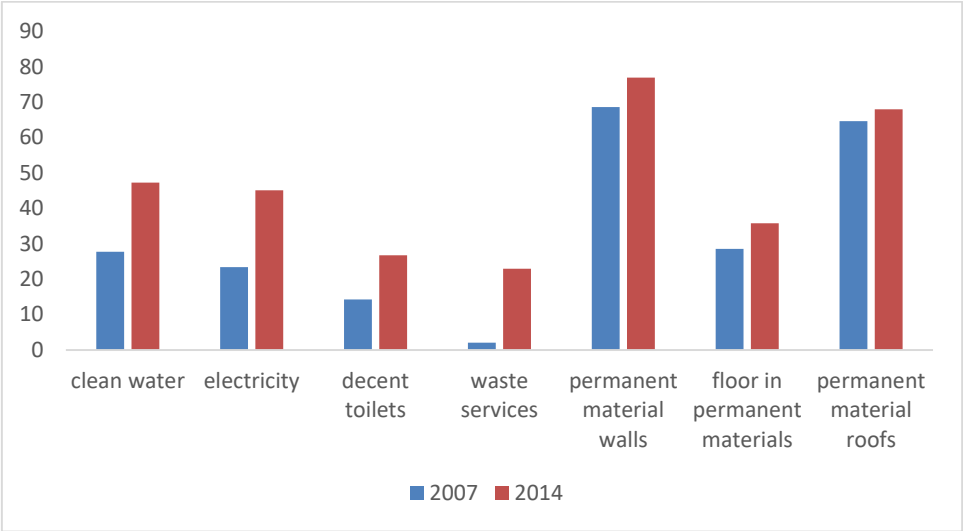
often made of wood and the cabin is roofless). Decent toilets can be an improved latrine (slab with concrete and tiles) with or without water, flush water is an exception.

**2.2.2 Access to basic social services**

Pure traditional houses of the Littoral region are characterized by makeshift latrine without shelter sometimes and outside, water supply to the well, to the backwaters and rarely to the standpipe..., sometimes no connection to electricity, clay floor most often, no direct access to a traffic lane... This type is found preferentially in the peripheral districts and in the rural part of the communes. In improved traditional houses, there is often electricity, latrine in the plot, outdoor toilet area and the more often paired with the latrine in a precarious shelter, roof with two or four slopes in corrugated iron, cement screed floor, outdoor kitchen, water supply from wells, springs, or boreholes most often, collective access and sometimes individual to the electricity network or wild connection. Modern houses are characterized by individual sanitation by septic tank, access to the Camwater water network or individual drilling.

Houses observed in the South region do not have an individual sanitation system. Indeed, the type of toilets here is mostly of the "lost pit" type. Some have watertight pits. But with regard to the evacuation of rainwater, apart from a few rare cases, the buildings do not have pipe systems. However, this characteristic is usual in the other regions of the great South Cameroon.

**Graph 1: Rural areas: Households having access to basic social services 2007 and 2014 (%)**



**Source: INS (ECAM 4)**

Clean water generally includes: Camwater water (tap water), developed natural water sources, water from good quality wells, borehole water, etc. Those who do not have access to drinking water generally get water from the village river: at a same place, they take their bath, they wash clothes..., and fetch water to drink. Some do have wells with poor water quality. For garbage management, a space is reserved for manure which is located just behind the kitchen.

The waste water is generally poured into the kitchen yard

## 2.2.4 Concluding Remarks

As we mentioned early, different publications related to decent housing in Cameroon do not draw a decent house line which can enable decide whether a house can be considered decent or not. However, from the above analysis we can draw the following as the main differences between a decent and non-decent house in the rural area of Cameroon.

**Table 3: Characteristics of decent and non-decent housing in Cocoa areas**

Non-decent housing in rural areas		Decent housing in rural areas	
Elements	Illustrations	Elements	Illustrations
Traditional construction materials	<u>Walls</u> in mud (poto-poto), mud blocks, Chinese bamboo, planks, carabote, <u>Floor</u> in bare ground <u>Roof</u> : Raffia leaves; old aluminium/metal sheets	Modern construction materials	<u>Walls</u> in cement blocks, mud bricks and concrete <u>Floor</u> : cemented or tiled <u>Roof</u> : Aluminium/metal sheets; tiled roof
High occupancy density and high promiscuity index	More than 2 persons in a single room	Low occupancy density and low promiscuity index	1 or 2 persons per room
Limited or no access to basic social services	No access to clean water Source of lighting: kerosene lamp Cooking energy: wood No modern sanitary	Access to basic social services	Access to clean water Access to electricity Cooking energy: gas Modern sanitary system: flush toilet

**Source: Computed by the author based on the literature review**

### Illustration of two non-decent houses in rural Cameroon



### A decent house in rural Cameroon



**Two non-decent toilets**



**From the above characteristics distinguishing a decent to a non-decent house in cocoa areas of Cameroon, we can build a model of decent housing in each cocoa region as follows**

**Table: Draft local housing standard**

Decent housing dimensions	Regions (household size)					
	Centre (5)	East (5)	Littoral (4)	South (5)	South-West (3)	West (4)
Walls	Earth bricks plus cement jointed concrete (Minimum standard)  Breeze blocks (Maximum Standard)	Earth bricks plus cement jointed concrete (Minimum standard)  Breeze blocks (Maximum standard)	Minimum standard  - Earth brick plus concrete cement joint or  - Wood or  - Stone  Maximum standard  Breeze blocks	Earth bricks plus cement jointed concrete (Minimum standard)  Breeze blocks (Maximum Standard)	Earth bricks plus cement jointed concrete (Minimum standard)  Breeze blocks (Maximum Standard))	Earth bricks plus cement jointed concrete (Minimum standard)  Breeze blocks (Maximum Standard)
Roofing	Aluminium sheets	Aluminium sheets	Aluminium sheets	Aluminium sheets	Aluminium sheets	Aluminium sheets
Floor	Smooth	Smooth	Smooth	Smooth	Smooth	Smooth
m2 living space	155 m <sup>2</sup> = - Rooms 16 m <sup>2</sup> * 4 =64 m <sup>2</sup> ; - Living room 16 m <sup>2</sup> *3=48 m <sup>2</sup> ; - Store 16 m <sup>2</sup> ; - Veranda 3*5=15 m <sup>2</sup> ;	155 m <sup>2</sup> = - Rooms 16 m <sup>2</sup> * 4 =64 m <sup>2</sup> ; - Living room 16 m <sup>2</sup> *3=48 m <sup>2</sup> ; - Store 16 m <sup>2</sup> ;	155 m <sup>2</sup> = - Rooms 16 m <sup>2</sup> * 4 =64 m <sup>2</sup> ; - Living room 16 m <sup>2</sup> *3=48 m <sup>2</sup> ; - Store 16 m <sup>2</sup> ;	155 m <sup>2</sup> = - Rooms 16 m <sup>2</sup> * 4 =64 m <sup>2</sup> ; - Living room 16 m <sup>2</sup> *3=48 m <sup>2</sup> ; - Store 16 m <sup>2</sup> ;	139 m <sup>2</sup> = - Rooms 16m <sup>2</sup> *3=48m <sup>2</sup> ; - Living room 16 m <sup>2</sup> *3=48m <sup>2</sup> ; - Store 16m <sup>2</sup> ; -Veranda 3*5=15 m <sup>2</sup> & ;	155 m <sup>2</sup> = - Rooms 16 m <sup>2</sup> * 4 =64 m <sup>2</sup> ; - Living room 16 m <sup>2</sup> *3=48 m <sup>2</sup> ; - Store 16 m <sup>2</sup> ; - Veranda 3*5=15 m <sup>2</sup> ;

Decent housing dimensions	Regions (household size)					
	Centre (5)	East (5)	Littoral (4)	South (5)	South-West (3)	West (4)
	- Corridors : 12 m <sup>2</sup>	- Veranda 3*5=15 m <sup>2</sup> ; - Corridors: 12 m <sup>2</sup>	- Veranda 3*5=15 m <sup>2</sup> ; - Corridors: 12 m <sup>2</sup>	- Veranda 3*5=15 m <sup>2</sup> ; - Corridors: 12 m <sup>2</sup>	- Corridors : 12m <sup>2</sup>	- Corridors: 12 m <sup>2</sup>
Energy (light)	Individual solar panel One lamp per room, which can be switched on at any time of day (24 hours), as the habitat is linear.	Individual solar panel One lamp per room, which can be switched on at any time of day (24 hours), as the habitat is linear.	Individual solar panel One lamp per room, which can be switched on at any time of day (24 hours), as the habitat is linear.	Individual solar panel One lamp per room, which can be switched on at any time of day (24 hours), as the habitat is linear.	- A small power station that supplies the village with electricity because the housing is grouped together;  - Generator set.	Small power station to supply the village, as housing is grouped together.
Energy for cooking	Wood fire with earthen block oven and chimney	Wood fire with earthen block oven and chimney	Wood fire with earthen block oven and chimney	Wood fire with earthen block oven and chimney	Wood fire with earthen block oven and chimney	Wood fire with earthen block oven and chimney
Waste location	Sandstone pit with degradable waste	Sandstone pit with degradable waste	Sandstone pit with degradable waste	Sandstone pit with degradable waste	Sandstone pit with degradable waste	Sandstone pit with degradable waste
Kitchen location	External with fireplace and filing shelves. Size 16 m <sup>2</sup> *3=48m <sup>2</sup>	External with fireplace and filing shelves. Size 16 m <sup>2</sup> *3=48m <sup>2</sup>	External with fireplace and filing shelves. Size 16 m <sup>2</sup> *3=48m <sup>2</sup>	External with fireplace and filing	External with fireplace and	External with fireplace and filing

Decent housing dimensions	Regions (household size)					
	Centre (5)	East (5)	Littoral (4)	South (5)	South-West (3)	West (4)
				shelves. Size 16 m <sup>2</sup> *3=48m <sup>2</sup>	filing shelves. Size 20m <sup>2</sup>	shelves. Size 16 m <sup>2</sup> *3=48m <sup>2</sup>
Cocoa drying area	7m <sup>2</sup> long by 5m <sup>2</sup> wide (35m <sup>2</sup> ) (see photo)	7m <sup>2</sup> long by 5m <sup>2</sup> wide (35m <sup>2</sup> ) (see photo)	7m <sup>2</sup> long by 5m <sup>2</sup> wide (35m <sup>2</sup> ) (see photo)	7m <sup>2</sup> long by 5m <sup>2</sup> wide (35m <sup>2</sup> ) (see photo)	7m <sup>2</sup> long by 5m <sup>2</sup> wide (35m <sup>2</sup> ) (see photo)	6m <sup>2</sup> (two-level system for a total of 32m <sup>2</sup> ) with aerated stall device
Toilets	External but fitted out for the household (Cast, roof, door with electrification). These toilets must have two blocks (one block with a potty for the elderly and one single block).	External but fitted out for the household (Cast, roof, door with electrification). These toilets must have two blocks (one block with a potty for the elderly and one single block).	External but fitted out for the household (Cast, roof, door with electrification). These toilets must have two blocks (one block with a potty for the elderly and one single block).	External but fitted out for the household (Cast, roof, door with electrification). These toilets must have two blocks (one block with a potty for the elderly and one single block).	External but fitted out for the household (Cast, roof, door with electrification). These toilets must have two blocks (one block with a potty for the elderly and one single block).	External but fitted out for the household (Cast, roof, door with electrification). These toilets must have two blocks (one block with a potty for the elderly and one single block).

**Table: Draft local housing standard**

<b>Housing characteristics</b>	<b>International minimum standards</b>	<b>Local situation</b>	<b>Feasible local standard (common in location &amp; meets international standards)</b>	<b>Standard from other countries</b>
<b>Materials</b>				
Walls	Principle of durable structure: permanent floor above ground ( cement, stone, tile wood floor) , permanent walls (brick, cement, well-joined wall) and permanent roof without leaks (zinc or iron sheet, cement, tile roof)	Dried mud, planks, Chinese bambou	Cement block, dried brick	Brick walls in Malawi (HH of 5) Ghana (reference family: 4.5): cement block, concrete, brick, in decent condition
Roof		Raffia, Old zinc	Zinc, tiles, no leaks	Durable roof of zinc or cement without leaks in Malawi Ghana: metal sheet or tiles, no leaks
Floor		Bare ground	Cemented	Cement floor in Malawi Ghana: Floor made of cement, concrete or tiles, in decent condition
<b>Amenities</b>				
Toilet	Safe sanitation and sewage disposal (flush toilet, pit latrine with slab, VIP toilet)	Outdoor traditional	Outdoor modern: with flush toilet	Pit latrine in good condition in close proximity to house in Malawi Ghana: Pit latrine with slab, KVIP or flush toilet, clean and acceptable drainage and depth. Public toilet acceptable if meets standard, is only shared by a few households and is close to home. Kenya: pit latrine in good condition with slab and sufficiently deep enough for proper drainage, used by at most 15 people

Water	Safe water source in or near house (piped, pump, protected well)	River water	Protected well	Potable drinking water in relatively close proximity to house in Malawi Ghana: piped into dwelling or nearby, public tap, borehole/ pump/ tube well, protected well or spring (max. 30 min. away)
Electricity		Source of lighting: kerosene lamp	Eneo electricity, gas, solar, generators, kerosene lamp	Electricity does not an indicator in Malawi where only 3% of rural people have electricity In Kenya: lake Naivasha area only
<b>Ventilation &amp; lighting</b>				
Ventilation quality		Less than one window per room	one window per room	Ghana: $\geq 1$ window per room. Ceiling height no less than 2m.
Lighting	At least 1 window per room or another light source	Less than one window per room	one window per room	Sufficient number of windows for adequate lighting and ventilation (preferably 2 windows per room) in Malawi Ghana: Mains electricity required, but acceptable to use torches and kerosene lamps during power outages.
Number of windows	At least 1 window per room	Less than one window per room	one window per room	Ghana: $\geq 1$ window per room
<b>Living space</b>				
Number of m2 of living space	30-37m2 in low income countries, 36 – 48 in lower middle income countries	155m2	one window per room at least two windows in the dining room	Ceiling at least 2m at lowest point, at least around 30 square meters of floor space in Malawi Ghana: $\geq 36$ m2 living space for a family of 4.5 (floor area of usable rooms, including covered porch area).
Number of rooms (for average HH size)		2 plus living room	3 plus living room	at least 3 rooms (living room, 2 bedrooms) in Malawi
Kitchen location	safe food storage in separate area,	external kitchen, intensive use of firewood	Gas and firewood use	Ghana: If cooking inside or on porch, adequate ventilation is required (especially when using wood or charcoal stoves)

	ventilation for cooking areas		external kitchen with chimney to evacuate smoke	
<b>Condition</b>	Extreme temp no acceptable			
<b>Environment</b>	Safe			

## **2.3- Non-food, non-housing costs including education and health care (NFNH)**

### **2.3.1 Transport**

According to the EDS-V, 22% of rural households own a motorbike or scooter, 15.5% own a bicycle and only 2.4% of households own a car or truck. In rural areas, motorcycles are generally the most popular means of transport, due to road conditions and financial resources.

The level of economic well-being of households can be assessed, among other things, by the ownership of certain equipment, means of transport and by the ownership of land or farm animals or livestock. In the EDSC-V, households were asked whether or not they owned these types of durable goods. Overall, the most frequently owned durable goods by households were mobile phones, televisions, watches, TV/satellite cables, and radios. In terms of means of transport, a motorbike or scooter, a bicycle, a car or a truck.

### **2.3.2 Communication**

According to the EDS-V, in general, urban households (especially those in the cities of Yaoundé and Douala) are better equipped with durable goods than those in rural areas. Overall, the most frequently owned durables are mobile phones (85%), televisions (51%), watches (43%), TV/satellite cables (39%) and radios (39%). In rural areas, 28.3% of households own a radio; 18.6% own a television. In terms of mobile phone ownership, in 2018, 74% of households own a mobile phone and 0.5% of households own a landline phone. Mobile phone ownership is clearly on the rise (from 24% in 2004 to 67% in 2011 and 85% in 2018); this is true both in urban areas (from 42% in 2004 to 88% in 2011 and 94% in 2018) and in rural areas, where the increase is greater (from 5% in 2004 to 46% in 2011 and 74% in 2018).

### **2.3.2 Recreation and Culture**

Ownership of agricultural land and farm animals is more prevalent in rural areas than in urban areas (EDS-V, 2018). In rural areas, 85.8% of households own agricultural land and 62.6% own livestock or farm animals.

### **Audio-visual, photographic and information processing equipment**

According to the EDS-V 2018 [Enquête démographique et de santé], regardless of gender, television is the most used medium in rural areas: 35.1% of men and women aged 15-49 watch television at least once a week. Radio is the second most listened to medium (respectively 10.1% of women and 17.8% of men). Internet use is not yet widespread in Cameroon; 6.3% of women aged 15-49 in rural areas said they had used the Internet in the last twelve months. Of these women, 33.6% use it almost every day. Among men in the same age group, these proportions are 15.9% and 35.2% respectively. Exposure to media varies significantly according to where one lives. Nearly eight out of ten women (79%) living in rural areas are not regularly exposed to any media, compared to 26% of those living in urban areas. The situation is similar for men, with 71% and 27% respectively.

Exposure to the internet varies by survey region (EDS-V 2018). The proportions of women who have used the internet in the last 12 months are lowest in the Far North and North regions (4% and 5% respectively). Among men, these proportions are 14% in the Far North and 16% in the North. Media exposure increases with the level of education. The proportion of women not exposed to the media varies from 92% among those with no education to 37% among those with lower secondary education and 9% among those with higher education. The trend is similar for men, with percentages of 86%, 43% and 12% respectively.

In terms of ownership of other IT tools, the same EDS-V survey reports that: 1.5% of households in rural areas have a desktop computer; 2.5% a laptop or notebook and 0.8% a tablet computer.

### **Other recreational items and equipment, gardens and pets**

As for pet ownership, dogs and cats are the most common pets in rural areas. On the other hand, their nutrition is often trivial (they are given leftover household food, and sometimes even left to fend for themselves in terms of nutrition). They have never been to the vet, and are often carriers of disease.

### **Recreational and cultural services**

Expenditure on cultural and recreational services is household final consumption expenditure. In Cameroon. Most of the income from "community" exploitation in rural areas is paid back to the GIC for social projects (construction of schools, cultural centers, play areas, etc.).

### **Newspapers, books and stationery**

In rural areas, 1.3% of women aged 15-49 read a newspaper at least once a week. However, 79.0% of this same category of women are not exposed to any media at least once a week. As for men, 3.4% read a newspaper at least once a week and 70.6% of men are not exposed to any media at least once a week (EDS-V, 2018).

### **2.3.3 Restaurant and hotels**

#### **Catering services**

In rural areas, local alcoholic beverages such as Matango are consumed mainly in the Centre and Littoral regions, and Otondole mainly in the South and East. As far as food is concerned, local foods such as bushmeat, etc., can be found in public places such as roadsides, bus stops, drinking spots or small village restaurants and markets.

#### **Accommodation**

Rural tourism: is a form of alternative tourism in rural areas, particularly among farmers, but also among locals who do not live off the land. This type of tourism encompasses accommodation, catering and leisure activities. In addition to their farming activities, producers can offer accommodation or excursions.

#### **2.3.4 Miscellaneous**

##### **Equipment required for cocoa production**

According to the manual of the cocoa planter (2015), the cocoa farmer needs the following equipment for the production of his cocoa. To examine the soil, he needs equipment such as picks, shovels and machetes (which can also be used to remove living plants from cocoa trees and Gourmand). To treat the plantation, he needs a sprayer, and to treat the young cocoa trees, he needs a backpack sprayer. In addition, he needs Personal Protective Equipment to avoid contamination. Fertilisers and other inputs (herbicide, fungicide, and insecticide) are essential for good production over long periods.

##### **Personal care and clothing**

In rural areas in general, households have almost nothing in terms of personal hygiene and clothing. Children are left without clothes, or with clothes that are torn and dirty all the time. Parents also wear dirty clothes all the time.

The majority of people living in rural areas do not have the means to have soap at all times. This is reflected in their precarious personal hygiene. Sales outlets are sometimes far from their homes. Water is sometimes hard to find. It takes time and energy. Water must be saved for cooking and bathing only.

##### **Social protection/ Insurance**

The formal social protection system covers less than 12% of the total population. The vast majority of the population has no form of coverage, which makes them vulnerable to the risks and hazards of life [PNPS in Cameroon December 2017].

According to the EDS-V, in rural Cameroon: 0.1% of women aged 15-49 have social security. 0.3% of this same category of women have other health insurance provided by the employer. 0.2% of these women have a mutual health insurance/community health insurance. 0.0% of women have a subscription to a private commercial insurance and 99.4% have no insurance at all. In addition, 0.6% of these women have taken out any kind of medical insurance. As for medical coverage among men aged 15-49 in rural areas, the EDS-V reports that: 0.2% have social security. 0.8% of this same category of men have other health insurance provided by the employer. 0.1% of these men have mutual health insurance/community health insurance. 0.2% have private commercial insurance and so 98.7% have no insurance. In addition, 1.3% of these men have taken out any kind of medical insurance.

More often, in rural areas, people get together in small meetings called "Tontines", where they pay in a certain amount of money, usually every month, and at the end of each month, for example, someone collects the money and so on. Tontines are necessary for solidarity, mutual

aid in the event of accidents and multi-faceted mutual aid. It is also possible to save money and make loans in tontines.

Main expense groups	What you need for a decent life in cocoa growing areas in Cameroon	Costing elements
Transport	<ul style="list-style-type: none"> <li>➤ Personal transport</li> <li>- Motorcycle or scooter</li> <li>➤ Transport of goods &amp; merchandise</li> <li>- Tricycle ;</li> <li>- Carry all (Porte tout or pousse pousse) ;</li> <li>- Wheelbarrow.</li> </ul>	<p>For a household to be considered decent, it must have :</p> <ul style="list-style-type: none"> <li>-1 motorcycle or scooter must be owned by the household for transporting people. The durability of which may be 3 years due to the state of the roads in rural areas and the use of motorcycles (for transporting people and goods as well).</li> <li>-1 tricycle for transporting goods from the fields to the house and town. Durable for up to 5 years.</li> <li>-1 carrier and/or 1 wheelbarrow for transporting goods in the field and from the field to the road and/or home.</li> </ul>
Communication	<ul style="list-style-type: none"> <li>• Cell phone (Android &amp; GSM);</li> <li>• Monthly call and internet package;</li> <li>• TV set ;</li> <li>• TV/satellite network cabling;</li> <li>• Radio</li> </ul>	<p>For a household to be considered decent, you need</p> <ul style="list-style-type: none"> <li>- 2 cell phones (1 for the mother and 1 for the father);</li> <li>- 1 monthly package for telephone calls and internet;</li> <li>- 1 television set;</li> <li>- 1 cable to the TV/satellite network;</li> <li>- 1 radio</li> </ul>
Recreation and culture (Audio-visual, photographic and information processing equipment ; Other recreational items and equipment, gardens and pets; Newspapers, books and stationery)	<ul style="list-style-type: none"> <li>✓ Television</li> <li>✓ Radio</li> <li>✓ Social networking (Internet/media)</li> <li>✓ Tablet computer</li> <li>- Membership of cultural and political associations ;</li> <li>• Dog ;</li> <li>• The cat ;</li> <li>• The pendulum clock ;</li> <li>• Playground;</li> <li>• Places of worship (Churches) ;</li> <li>• Community library ;</li> <li>• Weddings</li> <li>• Funerals</li> <li>• Periodic festivities</li> </ul>	<p>In terms of leisure and culture, a decent life would require at least</p> <ul style="list-style-type: none"> <li>- 1 television set</li> <li>- 1 radio</li> <li>- 1 monthly package (Internet/phone call)</li> <li>- The various contributions made by cultural associations (membership fees, operating contributions, event funding, etc.);</li> <li>- Proper pet nutrition and veterinary care;</li> <li>- 1 clock ;</li> <li>- Playground for the children;</li> <li>- Different contributions in places of worship (churches);</li> <li>- Community library ;</li> <li>- Wedding contributions which may occur at least twice per year (50000 fcfa/year);</li> <li>- Funeral contributions which may occur at least five times per year (100,000 fcfa/year)</li> <li>- Contributions to periodic festivities which may occur at least five times per year (200,000 fcfa/year)</li> </ul>
Restaurant and hotels	<ul style="list-style-type: none"> <li>• Local drinks (Matango and Odontol) ;</li> <li>• Local foods ;</li> <li>• Basic necessities</li> </ul>	<ul style="list-style-type: none"> <li>-Matango (1L/day)</li> <li>- Odontol (1glass/day)</li> <li>- Local foods (1plat of food/week)</li> </ul>
Miscellaneous	<ul style="list-style-type: none"> <li>• Toilet soap and body oil</li> </ul>	<p>For a household to be considered decent in rural areas, it would need to have:</p>

Main expense groups	What you need for a decent life in cocoa growing areas in Cameroon	Costing elements
(Personal care and clothing)	<ul style="list-style-type: none"> <li>• Men's (with mobile clippers) and women's haircuts</li> <li>• Toothpaste</li> <li>• Toilet paper</li> <li>• Clothes</li> <li>• Laundry soap (macabo or cube soap or detergents)</li> <li>• Bleach;</li> <li>• Body perfume.</li> </ul>	<ul style="list-style-type: none"> <li>- Toilet soap and body oil for the whole family;</li> <li>- Parents and children should be able to comb their hair at least once every two weeks. 1 mobile clipper per household for men;</li> <li>- Toothpaste for children and adults;</li> <li>- 2 bales of toilet paper per household per year;</li> <li>- Clothes for the whole family, renewable 2 times/year;</li> <li>- laundry soaps 400g (macabo or cube soaps or detergents).</li> </ul>
Miscellaneous (Social protection and insurance)	<ul style="list-style-type: none"> <li>• CNPS voluntary insurance (health, etc.);</li> <li>• Tontine ;</li> <li>• Mobile account (Orange and/or Mobile Money).</li> </ul>	<p>In order to be considered a decent rural household, this household should :</p> <ul style="list-style-type: none"> <li>- Be affiliated to the Caisse de Prévoyance Sociale (CNPS) for at least social protection;</li> <li>- Participation in tontines usually requires financial contributions, which can be daily, weekly or monthly.</li> <li>- Also have a functional mobile account (Orange and/or Mobile Money).</li> </ul>
Equipment required for cocoa production	<ul style="list-style-type: none"> <li>• Atomizer ;</li> <li>• PPE (Personal Protective Equipment) ;</li> <li>• Pesticide ;</li> <li>• Fertilizers ;</li> <li>• Cocoa plants ;</li> <li>• Phytosanitary products (Insecticide, fungicide, herbicide, miscellaneous) ;</li> <li>• Watering cans ;</li> <li>• Machetes</li> <li>• Secateurs ;</li> <li>• Rakes ;</li> <li>• Files ;</li> <li>• Axes ;</li> <li>• Pickaxes ;</li> <li>• Doser.</li> </ul>	<p>For decency in the work of a cocoa farmer's household you need :</p> <ul style="list-style-type: none"> <li>- 2 Atomizers ;</li> <li>- PPE equipment (goggles, mask, apron, overalls, nitril gloves, PCV boots, apron) for at least 03 people;</li> <li>- Pesticide ;</li> <li>- Fertilizers ;</li> <li>- Cocoa plants</li> <li>- Phytosanitary products (Insecticide, fungicide, herbicide, miscellaneous) ;</li> <li>- 3 Watering cans;</li> <li>- 3 Machetes ;</li> <li>- 3 pruning shears ;</li> <li>- 3 rakes ;</li> <li>- 2 files ;</li> <li>- 1 axe ;</li> <li>- 2 picks ;</li> <li>- 1 Doser.</li> </ul>

## 2.4 Health

### **2.4.1 Health expenditure**

According to ECAM III, 2008, the share of expenditure devoted to health is estimated at the national level at 3.9% of total household expenditure. This indicator does not make it possible to clearly differentiate households residing in rural areas from those residing in urban areas. In Cameroon, health expenditure is almost financed by households. The contribution of households to current health expenditure in 2019 is 72.2% (Report on health accounts in Cameroon 2018 – 2019). It also appears that each member of households in rural areas spends an average of 8,512 FCFA annually on health (ECAM III, 2008). Household health spending on health is sometimes higher than their income given the high number of people in a household in rural areas (5.6) (DHS, 2018). According to Joseph Parfait OWOUNDI, 2013 from the Ministry of Economy of Cameroon, 51.5% of households spent more than all of their income on health, 32.2% spent less than half of their income on health; 16.3% spent more than half of their income on health. In addition, health expenditure increases with the level of income. However, only two to three percent of the population have health insurance coverage (Cameroon: Access to Health Care and Specialized Education, 2019). Faced with this reality, it is necessary as part of this work to verify whether the income of cocoa producers allows them to have access to the health care they need. Health expenditure, traced in the report on health accounts in Cameroon 2018 - 2019, covers different types of services: hospitalization costs, "ambulatory care" costs, drug expenditure, optics, prostheses and small medical equipment, medical transport costs. These expenses are almost similar to those observed in households in rural areas, namely consultations, the purchase of health records, hospitalizations, nursing care, drugs, laboratory tests, deliveries, and transport. .

### **2.4.2 Epidemiological profile: Common diseases in rural areas**

There are diseases that are particularly prevalent in rural areas and that affect a high proportion of the population. There are among others:

#### **Communicable diseases: HIV/AIDS, malaria and viral hepatitis**

**Malaria:** Malaria accounts for approximately 45% of medical consultations, 23% of hospitalizations, 26% of sick leave, 40% of deaths in children under 5, 35% of hospital mortality and 40% of the annual budget of households [Jeuneafrique.com]. In 2016, the average prevalence of malaria was 30.04%, and 37.1% in rural areas [WOUNANG, R., KETCHOUM NGAHANE, G. C. (2011)]. Another source indicates that rural malaria affects 9,314,928 inhabitants, or 48% of the national population. [Dominique Meva'a Abomo (2016)] The prevalence of malaria is high in the regions of the Center (without Yaoundé) (52.4%), the East (48.2%), the South-West (46.1%), the South (43.1%) and low in the West (26.8%), North-West (15.0%) regions [Severe Malaria Observatory (2022)]. Pregnant women and children under five, who are the most exposed layers, benefit from free treatment for simple malaria. According to the decision of the Ministry of Health on setting the price and terms of availability of kits, the rapid malaria diagnostic kit is sold to patients in health facilities or through community relays at 200 FCFA.

**HIV:** The prevalence of HIV is 2.7% in the population aged 15-49 and (2.4%) among people aged 15-49 in rural areas [Institut National de la Statistique Cameroun (2020)]. The southern

(5.8%) and eastern (5.6%) regions show the highest prevalence. The female/male infection ratio is 2.1%; evidence that women are more infected with the virus than men [Actions traitement (2020) VIH-Sida au Cameroun]. In 2021, new HIV infections were 14,451 [CNLS, 2022]. These new HIV infections were much more localized in the North-West (9.3%) and East (9%) [CNLS, 2022].

**Viral hepatitis:** The average seroprevalence of viral hepatitis B is 11.9%. The average prevalence of viral hepatitis D is 10.5%. That of viral hepatitis C is 1.03% and is higher in people aged 50 and over [Hailu T, Alemu M, Mulu W, Abera B., 2018.]. With regard to viral hepatitis B, rural populations (13.3%) are more affected than those in urban areas (10.7%) 8 [Centre Pasteur du Cameroun, 2015]. The prevalence of viral hepatitis C is higher in rural populations (1.2%) than those in urban areas (0.9%) [Centre Pasteur du Cameroun, 2015].

**Waterborne diseases:** The predominance of waterborne diseases in rural areas is explained by the low rate of access to drinking water and poor compliance with hygiene and sanitation measures. The prevalence of waterborne diseases increases during the dry season. Common waterborne diseases in rural areas include:

- **Scabies:** It spreads rapidly in crowded conditions and is most commonly seen as a papular rash between the fingers of the hand.
- **Diarrheal diseases:** According to EDS MICS, 2011, the proportion of children who have had diarrhea is higher in rural areas (23%) than in urban areas (18%). Prevalences vary from region to region. It is 18.2% in the East, 15.9% in the Center, 14.7% in the South, 14.2% in the West, 11.9% in the South-West, and 8.5% in the North West.
- **Typhoid fever:** People become infected by ingesting food or drink that has been handled by an infected person or after consuming drinking water contaminated with feces or influents containing the bacteria.

**Occupational diseases and risks (machete injury, ...).** Agricultural work, especially during sowing and harvesting, is often very strenuous and can cause various forms of disability, such as chronic joint ailments, deformities of the spine and legs, as well as conditions such as disc herniation and abdominal herniation. This intense work particularly affects women and young adolescents.

### **Snake bite**

A recent survey conducted across Cameroon and carried out as part of the SNAKE-BYTE project indicates that snakes bite more than 2,500 people in Cameroon each year. According to the Ministry of Public Health, the north (Adamaoua, North and Far North; dry and wooded savannah zone) accounts for 40% of the incidence and 77% of the mortality from envenomation in Cameroon, while in the South more forest, incidence and mortality correspond respectively to 32% and 16%. These estimates are however much lower than the reality due to the partial collection of data and the frequent use of traditional healers without referral to a health structure. The National Veterinary Laboratory (Lanavet) locally produces antivenoms.

### **Diabetes**

In Cameroon, the prevalence rate is 6% (5% in town and 1 to 2% in rural areas). This figure comes out of a large epidemiological study that was conducted two years ago. The most common type of diabetes in Cameroon is type 2, which is linked to advanced age. Diabetes is the 6th leading cause of death. However, compliance with the therapeutic regimes proposed by the medical profession can significantly reduce the risk of serious and fatal complications for the patient. The money it takes to treat a patient with diabetes is 10 times higher than what it takes for an infection, for example, which you treat once. Diabetes is a chronic and very complicated disease. These complications can very quickly lead to death.

### **High blood pressure**

In Cameroon, according to the Ministry of Public Health, 25% of the population suffers from high blood pressure (HTA). A study conducted in Cameroon found a prevalence of hypertension of 18.5% in men and 12.6% in women [Mbanya JC, et al. The prevalence of hypertension in rural and urban Cameroon. Int J...]

### **Yellow fever**

In 2021 in Cameroon, the Ministry of Public Health announced at least 13 deaths from yellow fever as well as 38 new cases recorded. The resurgence of the disease in the country affects at least 9 regions, only the South West region has not yet presented a case. Yellow fever has a current case fatality rate of 21%. The Expanded Vaccination Program sets up a vast vaccination campaign to fight against yellow fever. [Jacques MORVAN: Résurgence de la fièvre jaune au Cameroun, 2021]

### **Dental problem**

More than 9 out of 10 Cameroonians suffer or have suffered from cavities. According to the latest figures from the World Health Organization (WHO) which were revealed by the National Association of Dental Surgeons of Cameroon, 96.6% of Cameroonians suffer from cavities. [Arnaud Ntchapda, (2020) Cameroun : la carie dentaire touche presque toute la population]

### **Sore eyes**

The prevalence rate of blindness in Cameroon is 1% and that of visual impairment is 3% for a population of more than 18 million inhabitants (2008 estimate). There would be 650,000 visually impaired and 180,000 blind people in the country, 50% of whom (i.e. 90,000 individuals) have cataracts. Other causes are onchocerciasis, glaucoma, trachoma and corneal opacities. Oral diseases are the cause of at least 5 to 15% of family expenses in Cameroon. [Jean-Marie JIGTE (2013), Santé bucco-dentaire et ophtalmologie]

### **2.4.3 Reproductive Health**

In rural areas, very few women make prenatal visits and among those who make at least one prenatal visit, some do not return for continuity. In Cameroon, the discontinuity of prenatal care for women residing in rural areas is 41% [Rosine Angue ELLA, 2005]. According to the 2018 DHS, one in five women had not had prenatal consultations during pregnancy (20%). Some studies show that during pregnancy, women make more use of natural pharmacopoeia in rural

areas. According to LEMOUOGUE Joséphine, 2020, approximately 95% of women, pregnant or not at the time of the survey, said they always perform traditional rites and use self-medication, decoctions to monitor their pregnancy and to prepare their body for pregnancy childbirth. According to the 2018 DHS, the rate of births attended by trained/qualified providers is 53% in rural areas. Other sources show that the care of pregnant women is offered by various actors who mobilize local socio-cultural and ancestral know-how in this area, and the practice of home birth is predominant. 84% of women questioned also declared having already given birth at least once at home under the care of traditional healers or women midwives recognized in the village [LEMOUOGUE Joséphine, 2020]. Postpartum care is also less accessible. According to the DHS MICS 2011, postnatal care coverage for mothers within the recommended timeframes is 49% in rural areas. LEMOUOGUE Joséphine, 2020, reports that women consume other products as postpartum care. The pregnant woman must pay for transport to get to the health facility or to the traditional healers. She must also pay the costs of consultation, examinations in the first trimester and second trimester, childbirth, consultation of the child at birth.

#### **2.4.4 Offer of services**

In Cameroon, rural areas are characterized by the insufficiency and poor distribution of health centers which leads to the poor recourse of the populations to conventional health care. The problem of access to care by the population is acute in rural areas. [Fonds Africain de Developpement, 2000]. In rural areas, there is a predominance of public health facilities. Furthermore, we note the absence and even the inadequacy of health personnel in some health centers in these rural areas. The health facilities (integrated health center (CSI) and district medical center (CMA)) in rural areas are deserted by the nursing staff [SHALOM TCHOKFE NDOULA, 2019]. The ratio of qualified personnel to population is lowest in the predominantly rural regions (North-West). Added to this is the unequal distribution of doctors because of the 638 general practitioners in the country, only 78, or 12%, practice in rural areas [Ngangué Ngwen, 2018]. In the end, the technical platform is insufficient and there is a serious lack of equipment.

#### **2.4.5 Access to health care**

In rural areas, a household is on average at a distance of 6.8 km from the nearest district hospital or district medical center, 5.2 km from the pharmacy or health center. -nearest pharmacy [MINSANTE, 2020] People travel between 5 and 10 km on foot, for about 2 to 6 hours on foot to reach the nearest health center [Djoukouo Kouontang, Sylvie, 2020]. These distances traveled and especially the long travel time are explained by the remoteness of the rural environment due to the non-existence or dilapidation of the road network. The road is often impassable because it is slippery and muddy in the rainy season, making the mobility of populations even more difficult because some villages are only accessible by tracks. When a case of disease occurs, the village populations organize themselves to transport the sick person by transporting him in turn either on the back, on the door-all, on the stretchers, or on the motorbike to reach a health center the closer [Ngangué Ngwen, 2018]. It should be noted that geographical inaccessibility has a negative impact on the demand for health services. The

results of the study conducted by Ngangué Ngwen, 2018 show that patients living more than one kilometer from public health facilities will resort more to self-medication and traditional healers to the detriment of public health centers and public hospitals.

#### **2.4.6 Quality of service**

Without however guaranteeing the quality of the services offered, it can be synonymous with long waits, ineffective treatments, extortion from patients, and lack of drugs in health facilities leading patients to engage in various therapeutic behaviors.

#### **2.4.7 Therapeutic routes**

In Cameroon, in terms of recourse to care, consultation in a health facility is very low in first intention, i.e. 24% the first reflex in the event of illness [Commeyras C et al, 2006]. More than half of patients (52%) use self-medication, with (51.1%) in rural areas [Institut National de la Statistique, 2012]. They also use traditional medicine. But the figures on the use of traditional medicine are not known in Cameroon (national health development program 2016 – 2020). The director of the Health Care and Research Organization at the Ministry of Public Health, Dr. Martin Ekeke Monono, said in 2007 that 80% of the population uses traditional medicine. According to Abondo-ngono R. et al. (2015) traditional medicine is strongly rooted in national culture, especially populations in rural areas. In rural areas, the combination of biomedicine and traditional medicine is ideal because socio-cultural practices are regularly adopted on a daily basis by households who also believe that modern medicine cannot treat all diseases. On the other hand, self-medication should be reduced.

## Decent health

Diseases	Preventive control	Curative method	Costing
<b>Malaria</b>	<ul style="list-style-type: none"> <li>• <b>General population and children under five years old</b> <ul style="list-style-type: none"> <li>○ Use of mosquito net impregnated with insecticide.</li> <li>○ Hygiene and Sanitation around the houses</li> <li>○ Vaccination for the whole population</li> </ul> </li> <li>• <b>Chemoprevention in pregnant women</b></li> <li>• Administration of 3 doses of IPTp with SP to pregnant women from the thirteenth week at each scheduled antenatal consultation (ANC) until delivery</li> <li>• <b>Collective level</b> <ul style="list-style-type: none"> <li>○ Vaccination (Vaccination is</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Diagnostic</li> <li>• Medical treatment</li> </ul>	<p><b>Prevention</b></p> <ul style="list-style-type: none"> <li>• A mosquito net for 2 people. For a household of 6 people, 3 mosquito nets are needed. The lifespan of an impregnated mosquito net is 3 years.</li> <li>• Given the fact that 15% of households have more than 9 people, more mosquito nets could be given to households</li> <li>• Purchase of machetes, wheelbarrow, rake, and hoe (one machete per household and for the whole year)</li> <li>• Three doses of IPT with SP for each pregnancy (IPT is free for pregnant women and only in public health facilities) Purchase of vaccines (once a year)</li> </ul> <p><b>Diagnosis If malaria is suspected</b></p> <ul style="list-style-type: none"> <li>• Transportation costs to get to the health facility</li> <li>• Consultation fees</li> <li>• Costs of the health book</li> <li>• Systematic confirmation of any suspected case by rapid diagnostic test (RDT) or microscopy (RDTs are free for children under five and subsidized for the rest of the population)</li> <li>• Thick film or QBC fluorescence examination (fee)</li> <li>• Diagnostic kit (free for pregnant women and children under five years old and chargeable for the rest of the population)</li> <li>• Purchase of the thermometer (1 per year)</li> </ul> <p><b>Malaria management</b></p> <p><b>Case of uncomplicated malaria</b></p> <ul style="list-style-type: none"> <li>• In each household per year there are 1.9 cases of uncomplicated malaria per year</li> </ul>

	still in the pilot phase in some health districts in Yaoundé)		<p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• 1st line: Artesunate-amodiaquine (ASAQ)</li> <li>• 2nd line: Artemether-Lumefantrine (AL)</li> <li>• Artesunate-amodiaquine (ASAQ) is subsidized and free for children under five</li> <li>• Antipyretic treatment is recommended for children under 5 years old</li> <li>• Use of traditional decoctions under the base of certain essences such as Quinqueliba</li> <li>• Reassess the patient's condition after 48 hours or before in case of worsening</li> </ul> <p><b>Case of severe malaria</b>  <b>In each household there are 0.45 severe crises per year</b></p> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• Injectable artesunate or failing that;</li> <li>• Injectable quinine or injectable artemether</li> <li>• relay treatment with quinine in the event of treatment with quinine or with a therapeutic combination based on artemisinin (artesunate-amodiaquine or artemether-lumefantrine)</li> <li>• Use of antibiotics</li> <li>• Hospitalization</li> <li>• Reassess the patient's condition after 48 hours or before in case of worsening</li> </ul>
<b>viral hepatitis</b>	<ul style="list-style-type: none"> <li>• use of the male or female condom during sexual intercourse</li> <li>• Vaccination for hepatitis B</li> <li>• Male circumcision</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnostic</li> <li>• Medical treatment</li> </ul>	<ul style="list-style-type: none"> <li>• Hepatitis B prevalence: 13.3%</li> <li>• Hepatitis C prevalence: 1.2%</li> </ul> <p><b>Prevention</b></p> <ul style="list-style-type: none"> <li>• Female and male condoms (on average 5 per week)</li> <li>• The Hepatitis B vaccine, which is given in 3 doses (1 initial dose, the next dose 1 month after the initial dose, a last dose 6 months after the</li> </ul>

			<p>second) is free for children under 5 and paying for the rest of the population (7600fcfa per dose)</p> <p><b>Diagnostic</b></p> <ul style="list-style-type: none"> <li>• Consultation</li> <li>• Health book</li> <li>• Hepatitis test (paid but with the possibility of having free screening campaigns on average 3 times a year)</li> <li>• The Pasteur center in Cameroon is the most suitable diagnostic center in terms of biomedical analyses: which requires transport costs to go and do the test in Yaoundé, or sample transfer costs.</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• Hepatitis B treatment is lifelong and costs 2500 per month</li> <li>• Hepatitis C treatment costs 150,000 FCFA</li> <li>• Circumcision is done once in a lifetime</li> <li>• At the hospital, circumcision costs 15,000</li> <li>• In the village you need 15000 and a rooster (Littoral, Center)</li> </ul>
<b>Diabetes</b>	<ul style="list-style-type: none"> <li>• Have a healthy diet</li> <li>• Eat a variety of foods.</li> <li>• Eat 5 fruits and vegetables a day</li> <li>• Increase fiber intake.</li> <li>• Reduce the consumption of fat and salt.</li> <li>• Limit your alcohol intake.</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnosis through fasting blood glucose</li> <li>• Medical treatment</li> </ul>	<p>Prevalence is 1 to 2% in rural areas</p> <ul style="list-style-type: none"> <li>• On average 4 hospital visits per year for patients</li> </ul> <p><b>Prevention</b></p> <ul style="list-style-type: none"> <li>• See nutrition section</li> </ul> <p><b>Diagnostic</b></p> <ul style="list-style-type: none"> <li>• Consultation</li> <li>• Health book</li> <li>• Fasting blood glucose (Purchase Glucometer, test strips, and batteries)</li> </ul>

	<ul style="list-style-type: none"> <li>• Practice physical activities</li> </ul>		<ul style="list-style-type: none"> <li>• Medical examinations (glycosuria for diagnosis)</li> <li>• Routine medical examinations (glycated hemoglobin for monitoring)</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• One scale per year</li> <li>• Syringes to draw up the insulin vial</li> <li>• Needles for injecting insulin</li> <li>• Conventional insulin therapy (insulin injection 2 to 3 times a day)</li> <li>• Functional insulin therapy (4 or 5 insulin injections per day or installing an insulin pump)</li> <li>• Insulin injections using an insulin pen, syringe or insulin pump.</li> <li>• Oral and/or injectable antidiabetics are prescribed to control blood sugar.</li> </ul>
<b>High blood pressure</b>	<ul style="list-style-type: none"> <li>• Have a healthy diet</li> <li>• Eat a variety of foods.</li> <li>• Eat 5 fruits and vegetables a day</li> <li>• Limit your alcohol intake.</li> <li>• Practice physical activities</li> <li>• Have your blood pressure checked</li> </ul>	<ul style="list-style-type: none"> <li>• Have a healthy diet</li> <li>• Eat a variety of foods.</li> <li>• Eat 5 fruits and vegetables a day</li> <li>• Limit your alcohol intake.</li> <li>• Practice physical activities</li> <li>• Have your blood pressure checked</li> </ul>	<p>35% / one in 3 men suffer from it; not specified according to urban or rural setting<sup>i</sup></p> <p><b>Prevention</b></p> <ul style="list-style-type: none"> <li>• Diet</li> <li>• Purchase blood pressure monitor and batteries (1 blood pressure monitor per year and 4 batteries every three months)</li> </ul> <p><b>Diagnostic</b></p> <ul style="list-style-type: none"> <li>• Measurement of blood pressure using a tensiometer</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• Diet</li> <li>• Purchase of drugs and traditional pharmacopoeia products</li> </ul>
<b>HIV</b>	<ul style="list-style-type: none"> <li>• use of the male or female condom</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnostic</li> </ul>	<ul style="list-style-type: none"> <li>• Prévalence du VIH, 2,4% en milieu rural</li> </ul>

	<ul style="list-style-type: none"> <li>• Use of pre-exposure prophylaxis (or PrEP)</li> <li>• Use of post-exposure prophylaxis</li> <li>• screening for other sexually transmitted infections</li> <li>• Male circumcision</li> </ul>	<ul style="list-style-type: none"> <li>• Medical treatment</li> </ul>	<ul style="list-style-type: none"> <li>• Traitement du VIH est à vie et gratuit pour toute la population</li> </ul> <p><b>Prevention</b></p> <ul style="list-style-type: none"> <li>• Female and male condoms (on average 5 per week)</li> <li>• Male circumcision (once in a lifetime) <ul style="list-style-type: none"> <li>○ At the hospital circumcision costs 15,000 fcfa</li> <li>○ In the village you need 15000 fcfa and a rooster (Littoral, Center)</li> </ul> </li> </ul> <p><b>Diagnostic</b></p> <ul style="list-style-type: none"> <li>• Rapid diagnostic test (at least 4 times a year in a health facility or during a mass campaign)</li> <li>• Confirmation test for all people with a positive rapid test</li> <li>• Medical and prenatal consultations, medical records, biological follow-up examinations (CD4 and viral load), early HIV screening tests for children, antiretroviral drugs and drugs to prevent opportunistic infections will also be free for people living with HIV in Cameroon (Decision N°0498 D/MINSANTE/SG/CNLS/GTC/SP OF 04 April 2019)</li> <li>• In case of positive HIV serology, it is necessary to</li> <li>• The complementary assessment which includes the search for co-existing diseases: hepatitis A, hepatitis B, hepatitis C, sexually transmitted infections including syphilis, opportunistic infections, tuberculosis, pneumopathy is chargeable</li> </ul> <p><b>Lifetime treatment</b></p> <ul style="list-style-type: none"> <li>• Anti retroviral (free for the whole population)</li> </ul>
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<b>Yellow fever</b>	<ul style="list-style-type: none"> <li>• Vaccine (except for 9-month-old children / pregnant women / people with serious allergies to certain proteins, immunocompromised (HIV mood disorders))</li> <li>• Vector control</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnostic</li> <li>• Medical treatment</li> </ul>	<p>Cameroon recorded from January 1, 2021 to June 13, 2022, 49 probable cases of yellow fever. All regions of the country are affected.</p> <p>On average 1 episode per year. We can do an episode for a lifetime</p>
<b>Waterborne diseases (Diarrhea / Typhoid fever / Scabies)</b>	<ul style="list-style-type: none"> <li>• Hand washing with soap and water</li> <li>• Properly cook all meats (meat, poultry and seafood).</li> <li>• Drink clean water</li> <li>• Wash food properly Wash clothes well and dry them in the sun</li> <li>• Rotavirus vaccine in Cameroon's routine immunization program thanks to GAVI support</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnostic</li> <li>• Solutions de réhydratation</li> <li>• Traitement médicamenteux</li> </ul>	<p><b>Other:</b> On average 4 episodes per year in the dry season and 2 episodes in the rainy season</p> <p><b>Diarrhea:</b> a child has an average of 4 to 6 diarrheal episodes per year</p> <p><b>Prevention</b></p> <p><b>Diarrhea</b></p> <ul style="list-style-type: none"> <li>• Free rotavirus vaccine for children under 5 years old</li> </ul> <p><b>Scabies</b></p> <ul style="list-style-type: none"> <li>• Purchase of soap</li> </ul> <p><b>Typhoid fever</b></p> <ul style="list-style-type: none"> <li>• Vaccine against typhoid fever</li> </ul> <p><b>Diagnostic</b></p> <p><b>Diarrhea:</b> Stool examination</p> <p><b>Scabies:</b> Skin examination</p> <p><b>Typhoid fever</b></p> <ul style="list-style-type: none"> <li>• Rapid diagnostic test: Widal and Felix</li> <li>• Confirmation test: blood culture (blood culture)</li> </ul> <p><b>Treatment</b></p> <p><b>Typhoid fever</b></p> <ul style="list-style-type: none"> <li>• Taking antibiotics</li> </ul>

			<ul style="list-style-type: none"> <li>• Perfusion intraveineuse</li> <li>• Thérapie de réhydratation orale</li> </ul> <p><b>Scabies</b></p> <ul style="list-style-type: none"> <li>• External washing solutions</li> <li>• Ointments</li> </ul> <p><b>In case of simple diarrhea</b></p> <p><b>Rehydration solutions</b></p> <ul style="list-style-type: none"> <li>• Recipe from the World Health Organization (WHO)</li> <li>• Mix 1 liter of sterile water, 6 tbsp. coffee (= tea) of sugar and 1 tbsp. coffee (= tea) of salt.</li> <li>• Another recipe: mix 360 ml of unsweetened orange juice with 600 ml of cooled boiled water, to which 1/2 tsp. coffee (= tea) of table salt.</li> <li>• Use of antiperistaltic drugs which stop diarrhea by slowing bowel movements</li> </ul> <p><b>In case of severe diarrhea</b></p> <ul style="list-style-type: none"> <li>• Hospitalization</li> <li>• An intravenous infusion to rehydrate the body</li> <li>• Antibiotics are prescribed as needed to treat severe bacterial diarrhea</li> </ul>
<p><b>Occupational diseases and risks accidents at work (machete injury, snake bite)</b></p>	<ul style="list-style-type: none"> <li>• Protect yourself with equipment that limits cuts</li> <li>• Vigilance</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnostic</li> <li>• Medical treatment</li> </ul>	<p><b>Snake bite</b> 60% of cases without envenomation against 40% of envenomation</p> <p><b>Other occupational diseases and risks Accidents (machete injury,...)</b> On average 2 cases per month</p> <p><b>Prevention</b></p> <ul style="list-style-type: none"> <li>• Use of personal protective equipment (boots, gloves, etc.)</li> <li>• Antivenom serum for snakebites</li> <li>• Anti-tetanus serum 1 dose</li> </ul> <p><b>Diagnostic</b></p>

			<ul style="list-style-type: none"> <li>• Consultation</li> <li>• Health book</li> <li>• Clinical examinations</li> <li>• Purchase of materials for the management of the injury (syringe, plasters, betadine)</li> <li>• In the event of a serious cut requiring sutures (sutures, needles taken with antibiotics and NSAIDs, hydrogen peroxide)</li> <li>• Payment for nursing care</li> </ul>
<b>Respiratory infection</b>	<ul style="list-style-type: none"> <li>• Use of personal protective equipment during agricultural work</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnostic</li> <li>• Medical treatment</li> </ul>	<p>On average 6 visits per year per household</p> <p><b>Prevention</b> Personal protective equipment (face mask)</p> <p><b>Diagnostic</b></p> <ul style="list-style-type: none"> <li>• Consulting</li> <li>• Health book</li> <li>• Radio</li> <li>• Ecographies</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• Medications</li> </ul>
<b>Cough / cold / flu</b>	<ul style="list-style-type: none"> <li>• Drink plenty of fluids, preferably hot drinks</li> <li>• Vaccine</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnostic</li> <li>• Medical treatment</li> </ul>	<p>4 to 5 flu episodes per year</p> <p><b>Prevention</b> Vaccine (one injection every three years)</p> <p><b>Diagnostic</b></p> <ul style="list-style-type: none"> <li>• Consultation</li> <li>• Physical examination</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• Take grandmother's decoctions and traditional pharmacopoeia products</li> </ul>

			<ul style="list-style-type: none"> <li>• To take pills</li> </ul>
<b>dental problem</b>	<ul style="list-style-type: none"> <li>• Oral hygiene (brushing teeth twice a day)</li> <li>• Avoid consuming sugary foods</li> <li>• Get consulted by the dentist</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnostic</li> <li>• Medical treatment</li> <li>• Dental equipment</li> </ul>	<p>60 to 90% in disadvantaged and deprived areas</p> <p><b>Prevention</b></p> <ul style="list-style-type: none"> <li>• Toothpaste (two tubes per month)</li> <li>• Toothbrush (4 brushes per year)</li> <li>• Consultation with the dentist at least once a year</li> </ul> <p><b>Diagnostic</b></p> <ul style="list-style-type: none"> <li>• Consultation</li> <li>• Health book</li> <li>• Purchase of the health record</li> <li>• Oral X-ray</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• Consultation with the dentist once every two months for a year</li> <li>• Medications</li> <li>• Dental equipment</li> <li>• Dental extraction</li> <li>• Descaling</li> <li>• Filling and composites</li> <li>• Tooth devitalization</li> <li>• Crown / dental prosthesis</li> </ul>
<b>Sore eyes</b>	<ul style="list-style-type: none"> <li>• Use of personal protective equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Diagnostic</li> <li>• Medical treatment</li> <li>• Consumption of vitamin and beta-carotene foods</li> </ul>	<p>Consultation for sore eyes once a year</p> <p><b>Prevention</b></p> <p>Purchase of protective glasses</p> <p><b>Diagnostic</b></p> <ul style="list-style-type: none"> <li>• Consultation</li> <li>• Health book</li> <li>• Clinical examinations (visual acuity,</li> </ul>

			<p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• Medication</li> <li>• Surgery</li> <li>• Correction glasses</li> </ul>
<b>Reproductive Health</b>			<p>One pregnancy every two years</p> <p><b>Antenatal care</b></p> <ul style="list-style-type: none"> <li>• Consultation (paid for each visit)</li> <li>• Health record (one record per pregnancy)</li> <li>• Transportation to health facility (paid for each visit)</li> <li>• CPN are free (8 CPN recommended for a pregnancy)</li> </ul> <p><b>Biological examinations</b></p> <p>Biological examinations (once in the second trimester) are chargeable List of biological examinations to be done:</p> <ul style="list-style-type: none"> <li>• Blood group-Rhesus.</li> <li>• TPHA-VDRL (syphilis).</li> <li>• Urine dipstick (search for glycosuria and proteinuria).</li> <li>• HIV (if the woman does not disagree).</li> <li>• HVB (hepatitis B).</li> <li>• NFS (full blood count).</li> <li>• Search for proteinuria and glycosuria by strips (8 times per pregnancy)</li> </ul> <p><b>Ultrasound examinations</b></p> <ul style="list-style-type: none"> <li>• First ultrasound (between the 7th and 12th week of amenorrhea)</li> <li>• Second ultrasound (5 months)</li> <li>• Third ultrasound (7 months)</li> </ul> <p><b>Childbirth</b></p>

		<ul style="list-style-type: none"> <li>• Delivery costs (once every two months)</li> <li>• Hospitalization costs</li> <li>• Newborn consultation fees</li> <li>• Medication costs</li> <li>• Purchase of a health record for the newborn</li> </ul> <p><b>Post natal consultation</b></p> <ul style="list-style-type: none"> <li>• Pay transportation costs to the health center</li> <li>• Pay the consultation fees (on average 4 hospital visits after delivery)</li> <li>• Family planning</li> <li>• A visit to the hospital for the installation of the contraceptive method</li> <li>• 4 visits per year to the hospital for control or withdrawal of the method</li> <li>• Consultation</li> <li>• Purchase of contraceptives</li> <li>• Installation of the contraceptive method (paid)</li> <li>• withdrawal of the method</li> </ul>
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### Care delivery

Care services	Staff	Medical equipment and devices
<ul style="list-style-type: none"> <li>• Reception and information service</li> <li>• Outpatient consultation</li> <li>• Vaccination service</li> <li>• Service of pediatrics and neonatology</li> <li>• Dietary service</li> <li>• Geriatrics department</li> <li>• Nursing service</li> <li>• Dental care service</li> </ul>	<ul style="list-style-type: none"> <li>• General practitioner</li> <li>• Thanatopractitioner / reception service manager</li> <li>• Caregiver</li> <li>• Nurses</li> <li>• Midwife / midwife</li> <li>• Internal maintenance agent</li> <li>• External maintenance agent</li> </ul>	<ul style="list-style-type: none"> <li>• Examination couch or examination table for patient consultation</li> <li>• Stethoscope</li> <li>• Otoscope</li> <li>• Tensiometer</li> <li>• Medical height rod</li> <li>• Pulse oximeter</li> <li>• Pen lamp</li> </ul>

<ul style="list-style-type: none"> <li>• Eye care service</li> <li>• Emergency</li> <li>• Laboratory service</li> <li>• General medicine</li> <li>• Delivery service</li> <li>• Sexual and Reproductive Health Service</li> <li>• Pharmacy</li> <li>• Traditional medicine</li> <li>• Medical work</li> <li>• Health insurance</li> </ul>	<ul style="list-style-type: none"> <li>• Sanitary Medical Technician</li> <li>• Traditional practitioner / Naturopath</li> <li>• Traditional birth attendants</li> <li>• Dentist</li> <li>• Ophthalmologist</li> </ul>	<ul style="list-style-type: none"> <li>• Flowmeter and spirometer for monitoring patients' respiratory capacities</li> <li>• Examination gloves</li> <li>• Prescriptions book</li> <li>• Medical form for patient follow-up</li> <li>• Disinfectant and hydro alcoholic gels</li> <li>• Needle collectors</li> <li>• Medical thermometers</li> <li>• Scale weighs person</li> <li>• Emergency kit</li> </ul>
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#### Accessibility of care

<b>Health facility</b>	<b>Distance measurement</b>	<b>Travel time measurement</b>
<ul style="list-style-type: none"> <li>• Integrated Health Center (CSI)</li> <li>• Dispensary</li> <li>• District medical center (CMA)</li> <li>• District Hospital (HD)</li> <li>• Outpatient health center</li> </ul>	<ul style="list-style-type: none"> <li>• Average distance between a household and the nearest health facility is 5 km</li> </ul>	<ul style="list-style-type: none"> <li>• Car / motorbike at an average speed of 50km/h: 30 minutes</li> <li>• Walking: on average 1hour</li> </ul>

## **Service quality**

- Waiting time (less than one hour)
- Warm welcome for patients
- Drug prescriptions must be made by trained and qualified personnel
- Adaptation of prescriptions to people's lifestyles
- Advise the population on the importance of therapeutic compliance
- The pharmacies must be supplied according to the needs of the population
- Therapeutic itineraries must be diversified

## **Problems in using healthcare services (distance)**

- The closest household to the health center is on average 3 km away and the furthest household is on average 8 km away.
- The closest household to the district hospital is on average 8 km away and the furthest household is on average 10 km away
- Travel to health facilities is done on foot, by motorbike, or by car (rarely)
- Traveling on foot will take an average of 2 hours and by motorbike or car, on average 1 hour

## **2.5 Education**

### **2.5.1 Organization and functioning of education in Cameroon**

In Cameroon, the education system is governed by the education orientation law; Law No. 98/004 of April 14, 1998. Article 17 of this text establishes the different levels of education which are:

- nursery education;
- primary education;
- post-primary education;
- secondary education;
- normal education;
- higher Education.

The same law reaffirms the national option of biculturalism through two subsystems, inherited from the double French and English colonial supervision: the Anglophone subsystem and the Francophone subsystem. Knowing that primary education is compulsory, the overall overview of the indications relating to this organization is given in a table in the appendix.

The functioning of the education system depends on the contribution of the State, development partners and households. According to data from the World Bank and related to percentage of GDP between 2011 and 2020 [<https://donnees.banquemondiale.org/indicateur/SE.XPD.TOTL.GD.ZS?locations=CM>] (Reference of May 02nd, 2023), the share of public expenditure on education has increased from 2.7 to 3.2% for an average of 2.8%. Over the same period, the average annual percentage of GDP was 3.8% [<https://donnees.banquemondiale.org/indicateur/NY.GDP.MKTP.KD.ZG?locations=CM>] (Reference of May 02nd 2023)]. According to the same source and over the period between 2012 and 2021 [<https://donnees.banquemondiale.org/indicateur/SE.XPD.TOTL.GB.ZS?locations=CM>] (Reference of May 02nd 2023)], the share of education expenditure on total State expenditure has an arithmetic

average of 14.4% with a floor of 12.9% in 2014 and a ceiling of 16.9% in 2018. Although below the recommendation of the Global Partnership for Education, which projects this average at 20%, this proportion reflects the State's commitment to education.

However, household funding remains significant, although public primary school is free and public secondary education is subsidized. Indeed, **households devote on average between 9% (for primary) and 10% (for secondary) of their income to education** according to updated data from the most recent Cameroonian household survey (ECAM IV) [<https://donnees.banquemondiale.org/indicateur/NY.GDP.MKTP.KD.ZG?locations=CM> (Reference of May 02nd, 2023)]. In relation to expenditure per pupil, this proportion will make it possible to situate what each household devotes or should devote to the education of each child according to the level or type of education followed by the latter. By so, we can already see that the contribution of households to the education of their offspring requires them to have sufficient income, thus giving meaning and value to decent living standards among cocoa farmers.

### 2.5.2 Operationalization of decent living standards integrating education

Among cocoa farmers in Cameroon, decent living standards refer to **having a standard of living enabling them to meet the financial demands of their children's education at least at primary and secondary level, without compromising their ability to meet the other basic household needs**. To clearly define this concept, it is proposed to grasp it according to two conceptions: a comprehensive one which describes the qualitative aspects and another extensive which highlights the quantitative aspects; on the basis that secondary school is aspiring to lead a decent life.

#### According to a qualitative concept

From a qualitative point of view, the standards of decent living among cocoa farmers integrating education are to be considered as the effects for these professionals of the joint achievement of a productive job, of income allowing them to **meet related needs** and to others in their household as well as an activity of an acceptable quality because it can offer them social protection. It is therefore the expression of a safe activity, sufficient remuneration, appropriate and non-discrimination occupation allowing cocoa farmers to **meet their basic needs and necessary aspirations in life and not of survival, including the proper schooling of their children at least until the end of secondary school**. In the broadest sense, it is therefore the availability of a "**standard basket of goods and services**" to cover the costs of a balanced diet at low cost, decent housing, clothing and shoes, access to transport, healthcare, education of children, communication, a minimum of recreational and cultural activities.

Given the standardization of the costs, the organization and the functioning of public education in Cameroon, the differences in this basket may seem marginal between the regions although it can be observed differentiated effects linked to social or economic developments. Whatever the situation considered or the place envisaged, the standards of decent living among cocoa farmers thus appear to be those which allow them to **assume the various expenses linked to the education of their children while continuing to assume a life deemed decent in consideration of their environment**. They are therefore those who inspire **social consideration, respect and human dignity** because they provide them with a suitable life in relation to their status and their activity.

Strictly circumscribed to education, and as previously mentioned, decent living standards are therefore those that make it possible to meet the financial, material and other requirements of education at the nursery, primary or secondary levels. Through these indications and many others, decent living standards target to **provide or maintain an adequate standard of living for each cocoa farmer** at the national and local levels.

### **According to a quantitative approach**

The quantitative approach consists of financially assessing what are the necessary contributions and therefore the appropriate income of cocoa farmers to ensure the education of their children at different levels.

For this, we considered the matrix proposed by JRC and the average proportions of income that households devote to education in Cameroon. This matrix is based on sub-major expenditure groups represented by the different educational levels. To contextualize those expenditures, we excluded from this field the normal level, which is more a matter of vocational orientation or professional preparation. Similarly, although absent in rural areas where cocoa farmers are housed, higher education should be considered since cocoa farmers can enrol their children at that level.

As a reminder, ECAM IV establishes that households devote between 9 and 10% of their income to education. However, **this average percentage should be put into perspective by integrating household size and particularly the number of children attending school as well as the level at which they are enrolled** in the estimation process. On the other hand, it is necessary to **consider the level of household income** to try to circumscribe the share of income allocated to education by cocoa farmers.

Concerning **household size**, the latest Demographic and Health Survey (DHS) carried out in 2018 establishes that the average household size in rural areas in Cameroon is 5.6, or really 6 people [Demographic and Health Survey (DHS) 2018, P.18]. Obviously, households with no educated descendants will not devote any part of their income to education. This is the case for 21.6% of households in those rural areas [Ibidem, P. 42]. Thus, it can logically be argued that the more a household has children or young people in school, greater is the share of its income devoted to education. This is the case for 78.4% of households in rural areas in Cameroon, in which people aged 19 or less represent the majority of the household population [Ibidem, P.41]. Considering the assumption of 6 people per household [ ECAM IV seizes 5.6, since there is not 0.6 person, we consider 6], this makes about 4 children of school age on average, i.e. 2 in maternal/pre-primary or primary and 2 in secondary, on the basis of the distribution of the age pyramid in Cameroon [Ibidem, P.24].

With regard to **income**, the most recent Cameroonian household survey, ECAM IV, reveals that for households whose head comes from the agricultural informal sector as a socio-professional category, as is the case for cocoa farmers, 62, 8% [National Institute of Statistics, 4th Cameroonian household survey: Trends, profile and determinants of poverty in Cameroon between 2007 and 2014, P.41] earn less than CFAF 339,715 [Ibidem, P.15], which represents the poverty line in Cameroon in 2014. Based on this threshold as a basis for assessment, it appears that education should cost CFAF 33,971 to the household of cocoa farmers. In comparison with to the costs of education, **this amount seems prohibitive for a household headed by a cocoa farmer to ensure the education of its children on the basis of the income derived from its production.** This

redhibitory possibility remains problematic even in the perspective where his children would only be in primary school, in exclusive consideration of non-compressible and essential expenditures.

Indeed, a consultation of some resource persons in the education sector of the cocoa production areas in Cameroon establishes the overall costs of educating one child in public primary school at a minimum amount of 60,000 CFAF per year. In the public comprehensive secondary 1<sup>st</sup> cycle, this estimate is around 100,000 CFAF per year. The costs thus estimated cover the needs relating to school fees, materials and supplies as well as other expenditures for auxiliary or related services. Details of all this are proposed in appendix.

By placing the household income at the poverty line, this represents **an average of approximately 17.6% for the education of a child in primary school and 29.43% in comprehensive secondary 1<sup>st</sup> cycle**. Using the table proposed for this study by JRC, the data and information thus analysed and projected are proposed as follows:

<b>Sub-major expenditure group</b>	<b>% Expenditure in secondary data</b>	<b>Adjustment explanation</b>	<b>% After adjustment</b>
Maternal/pre-primary	9 %	Household size (number of children attending school as well as the level at which they are enrolled)	18 %
Primary			
Post primary	10 %	Household level of income	30 %
Secondary			

Although high projections, these readjusted values do not seem far from the socio-economic experience of cocoa production areas in Cameroon. Indeed, on a daily basis, depending on the opportunities and hazards they encounter, cocoa farming households adopt schooling strategies that allow them to keep their children in school, as evidenced by net attendance rates above the national average at the primary level, which is 77.5% [Demographic and Health Survey (DHS) 2018, P.47], with the exception of the North-West and South-West regions which face situations of violence and insecurity.

## Appendix

### Organization of the Cameroonian education system

Level of education	Subsystem		Legal age of admission	Conditions of admission	Duration	End of cycle diploma
Pre-primary	Anglophone and Francophone		3	Registration	3 years	Any
Primary	Anglophone		6	Registration	6 years	First school leaving certificate (FSLC)
	Francophone					Certificat d'études primaires (CEP)
Post primary (Vocational training subsystem that can integrate civic, social and entrepreneurial training)	Anglophone		14	Registration and competition for certain vocational training courses for holders of at least the CEP or the FSLC	3 years at most	Attestation for training courses not validated by MINEFOP and those lasting less than 2 years
	Francophone					Professional qualification certificate or diploma for training courses lasting a maximum of 3 years and validated by MINEFOP
Secondary	Anglophone	Comprehensive 1 <sup>st</sup> cycle	12	Holder of FSLC and admitted to Common entrance	5 years	General certificate of education (GCE) Ordinary level
		Technical 1st cycle			5 years	Technical and vocational examination (TVE) intermediate level
		Comprehensive 2 <sup>nd</sup> cycle	17	Holder of GCE Ordinary level Holder of TVE intermediate level or GCE Ordinary level	2 years	General certificate of education (GCE) Advanced level
		Technical 2 <sup>nd</sup> cycle			2 years	Technical and vocational examination (TVE) advanced level
	Francophone	Comprehensive 1 <sup>st</sup> cycle	12	Holder of CEP and admitted to competitive entrance Holder of CEP and admitted to competitive entrance	4 years	Brevet d'étude du premier cycle (BEPC)
		Technical 1st cycle				Certificat d'aptitude professionnelle (CAP)
			16		3 years	Probatoire (after 2 years)

		Comprehensive 2 <sup>nd</sup> cycle		Holder of BEPC and admitted to Form V		Baccalauréat (1 year after Probatoire)
		Technical 2 <sup>nd</sup> cycle		Holder of CAP or BEPC and admitted to competitive entrance in Form V	3 years	After 2 years: Probatoire Probatoire de Brevet de Technicien Brevet d'Études Professionnels 1 year after: Baccalauréat Brevet de Technicien Brevet Professionnel
Normal	Anglophone and francophone	Comprehensive teaching		Holder of any secondary official diploma and admission to competitive entrance	1, 2 or 3 years	Certificate of pedagogical aptitude for nursery and primary school teachers (CAPIEMP)
		Technical teaching		Holder of any secondary official technical diploma and admission to competitive entrance	1, 2 ou 3 years	Certificate of pedagogical aptitude for technical education teachers (CAPIET)
Higher	Unique		19 years	Holder of Baccalauréat or GCE A' level and admission to a competitive entrance for certain large schools and faculties	3 years	Licence
					2 years	Master
					3 years	Doctorate

## Overall Education cost

Education expenses	COST (CFAF)						
	Pre primary	Primary	1st Cycle Comprehensive Secondary School	2nd Cycle Comprehensive Secondary School	1st Cycle Technical Secondary School	2nd cycle Technical Secondary School	Vocational training
	<b>SCHOOL FEES</b>						
Registration fees			7500	10500	10000	15000	4500
Contributions to parent- teacher associations (PTA)	3000-5000	3000- 5000	10000- 20000	10000- 20000	10000- 20000	10000- 20000	10000
Exam fees		5500	8500	12000-14500	7000-10000	13000-14500- 16500-18500	10000
Competition fees		5500					
School insurance			100	100	100	100	
	<b>MATERIALS AND SUPPORTS</b>						
Purchase school uniforms	3500	3500	6500	7000	7000	7000	7000
Purchase of PSE outfit		3500	3500	3500	3500	3500	3500
Notebooks	5000	15000	20000	25000	25000	30000	20000
Required books and manuals	3000	10200- 12350	37600-49300	39000-61600		57600-170800	

Other Supplies	3500	5000	10000	5000	15000	20000	7500
Non-school books							
Newspapers, magazines							
Computer's materials		2500	5000	5000	5000	5000	5000
Didactic games							
	<b>OTHER EXPENSES FOR ANCILLARY OR RELATED SERVICES</b>						
Catering/snack/canteens/cafeteria	22500	22500	45000	45000	45000	45000	45000
Transport	80000	80000	80000	80000	80000	80000	80000
Accommodation / boarding school			45000-90000	45000-90000	45000-90000	45000-90000	45000-90000
Private lessons and tutoring							
Pin money							
Leisure and extracurricular activities							

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